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| **Chart  Description automatically generated** |
| **Supplementary Figure 11** |
| Baxter et al. Module Patterns Plot from *de novo* OTUs Assignment Method with Phenotype: Cancer |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |

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| Chart  Description automatically generated |
| **Supplementary Figure 12** |
| Baxter et al. Module Patterns Plot from DADA2ASVs Assignment Method with Phenotype: Cancer |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |
| Chart  Description automatically generated |
| **Supplementary Figure 13** |
| Baxter et al. Module Patterns Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |

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| Chart  Description automatically generated |
| **Supplementary Figure 14** |
| Baxter et al. Module Patterns Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |

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| Chart  Description automatically generated |
| **Supplementary Figure 15** |
| Zeller et al. Module Patterns Plot from *de novo* OTUs Assignment Method with Phenotype: Cancer |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |

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| Chart  Description automatically generated |
| **Supplementary Figure 16** |
| Zeller et al. Module Patterns Plot from DADA2ASVs Assignment Method with Phenotype: Cancer |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |

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| Chart  Description automatically generated |
| **Supplementary Figure 17** |
| Zeller et al. Module Patterns Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |

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| Chart  Description automatically generated |
| **Supplementary Figure 18** |
| Zeller et al. Module Patterns Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |
| Chart  Description automatically generated |
| **Supplementary Figure 19** |
| Gevers et al. Module Patterns Plot from *de novo* OTUs Assignment Method with Phenotype: Crohn's Disease |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |

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| Chart  Description automatically generated |
| **Supplementary Figure 20** |
| Gevers et al. Module Patterns Plot from DADA2ASVs Assignment Method with Phenotype: Crohn's Disease |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |
| Chart  Description automatically generated |
| **Supplementary Figure 21** |
| Gevers et al. Module Patterns Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |

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| Chart  Description automatically generated |
| **Supplementary Figure 22** |
| Gevers et al. Module Patterns Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |
| Chart  Description automatically generated |
| **Supplementary Figure 23** |
| IBDMDB Module Patterns Plot from *de novo* OTUs Assignment Method with Phenotype: Crohn's Disease |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |

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| Chart  Description automatically generated |
| **Supplementary Figure 24** |
| IBDMDB Module Patterns Plot from DADA2ASVs Assignment Method with Phenotype: Crohn's Disease |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |
| Chart  Description automatically generated |
| **Supplementary Figure 25** |
| IBDMDB Module Patterns Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |

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| Chart  Description automatically generated |
| **Supplementary Figure 26** |
| IBDMDB Module Patterns Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| **A.** Module Patterns are generated based on different minimal module sizes. Darkened columns represent the replicated patterns. **B.** The average silhouette width was calculated for different numbers of clusters with the consensus matrix generated from patterns in A. The unique patterns including all the minimal number of taxa per module until the unique modules drop below 10. |
| **Chart  Description automatically generated** |
| **Supplementary Figure 27** |
| Baxter et al. Consensus Plot from *de novo* OTUs Assignment Method with Phenotype: Cancer |
| Consensus plot based on the best estimated number of clusters obtained. |

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| **Chart  Description automatically generated** |
| **Supplementary Figure 28** |
| Baxter et al. Consensus Plot from DADA2ASVs Assignment Method with Phenotype: Cancer |
| Consensus plot based on the best estimated number of clusters obtained. |
| Chart  Description automatically generated |
| **Supplementary Figure 29** |
| Baxter et al. Consensus Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| Consensus plot based on the best estimated number of clusters obtained. |

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| Chart  Description automatically generated |
| **Supplementary Figure 30** |
| Baxter et al. Consensus Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| Consensus plot based on the best estimated number of clusters obtained. |

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| Chart  Description automatically generated |
| **Supplementary Figure 31** |
| Zeller et al. Consensus Plot from *de novo* OTUs Assignment Method with Phenotype: Cancer |
| Consensus plot based on the best estimated number of clusters obtained. |

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| Chart  Description automatically generated |
| **Supplementary Figure 32** |
| Zeller et al. Consensus Plot from DADA2ASVs Assignment Method with Phenotype: Cancer |
| Consensus plot based on the best estimated number of clusters obtained. |

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| Chart  Description automatically generated |
| **Supplementary Figure 33** |
| Zeller et al. Consensus Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| Consensus plot based on the best estimated number of clusters obtained. |

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| Chart  Description automatically generated |
| **Supplementary Figure 34** |
| Zeller et al. Consensus Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| Consensus plot based on the best estimated number of clusters obtained. |
| Chart  Description automatically generated |
| **Supplementary Figure 35** |
| Gevers et al. Consensus Plot from *de novo* OTUs Assignment Method with Phenotype: Crohn's Disease |
| Consensus plot based on the best estimated number of clusters obtained. |

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| Chart  Description automatically generated |
| **Supplementary Figure 36** |
| Gevers et al. Consensus Plot from DADA2ASVs Assignment Method with Phenotype: Crohn's Disease |
| Consensus plot based on the best estimated number of clusters obtained. |
| Chart  Description automatically generated |
| **Supplementary Figure 37** |
| Gevers et al. Consensus Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| Consensus plot based on the best estimated number of clusters obtained. |
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| Chart  Description automatically generated |
| **Supplementary Figure 38** |
| Gevers et al. Consensus Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| Consensus plot based on the best estimated number of clusters obtained. |
| Chart  Description automatically generated |
| **Supplementary Figure 39** |
| IBDMDB Consensus Plot from *de novo* OTUs Assignment Method with Phenotype: Crohn's Disease |
| Consensus plot based on the best estimated number of clusters obtained. |
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| Chart  Description automatically generated |
| **Supplementary Figure 40** |
| IBDMDB Consensus Plot from DADA2ASVs Assignment Method with Phenotype: Crohn's Disease |
| Consensus plot based on the best estimated number of clusters obtained. |
| Chart  Description automatically generated |
| **Supplementary Figure 41** |
| IBDMDB Consensus Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| Consensus plot based on the best estimated number of clusters obtained. |
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| Chart  Description automatically generated |
| **Supplementary Figure 42** |
| IBDMDB Consensus Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| Consensus plot based on the best estimated number of clusters obtained. |

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| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 43** |
| Baxter et al. Correlation Plot from *de novo* OTUs Assignment Method with Phenotype: Cancer |
| Correlation plot based on the best estimated number of clusters obtained. |

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| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 44** |
| Baxter et al. Correlation Plot from DADA2ASVs Assignment Method with Phenotype: Cancer |
| Correlation plot based on the best estimated number of clusters obtained. |
| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 45** |
| Baxter et al. Correlation Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| Correlation plot based on the best estimated number of clusters obtained. |

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| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 46** |
| Baxter et al. Correlation Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| Correlation plot based on the best estimated number of clusters obtained. |

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| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 47** |
| Zeller et al. Correlation Plot from *de novo* OTUs Assignment Method with Phenotype: Cancer |
| Correlation plot based on the best estimated number of clusters obtained. |

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| Scatter chart  Description automatically generated |
| **Supplementary Figure 48** |
| Zeller et al. Correlation Plot from DADA2ASVs Assignment Method with Phenotype: Cancer |
| Correlation plot based on the best estimated number of clusters obtained. |

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| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 49** |
| Zeller et al. Correlation Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| Correlation plot based on the best estimated number of clusters obtained. |

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| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 50** |
| Zeller et al. Correlation Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| Correlation plot based on the best estimated number of clusters obtained. |
| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 51** |
| Gevers et al. Correlation Plot from *de novo* OTUs Assignment Method with Phenotype: Crohn's Disease |
| Correlation plot based on the best estimated number of clusters obtained. |

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| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 52** |
| Gevers et al. Correlation Plot from DADA2ASVs Assignment Method with Phenotype: Crohn's Disease |
| Correlation plot based on the best estimated number of clusters obtained. |
| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 53** |
| Gevers et al. Correlation Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| Correlation plot based on the best estimated number of clusters obtained. |
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| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 54** |
| Gevers et al. Correlation Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| Correlation plot based on the best estimated number of clusters obtained. |
| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 55** |
| IBDMDB Correlation Plot from *de novo* OTUs Assignment Method with Phenotype: Crohn's Disease |
| Correlation plot based on the best estimated number of clusters obtained. |
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| Chart  Description automatically generated |
| **Supplementary Figure 56** |
| IBDMDB Correlation Plot from DADA2ASVs Assignment Method with Phenotype: Crohn's Disease |
| Correlation plot based on the best estimated number of clusters obtained. |
| Chart, scatter chart  Description automatically generated |
| **Supplementary Figure 57** |
| IBDMDB Correlation Plot from *de novo* OTUs Assignment Method with Phenotype: Normal |
| Correlation plot based on the best estimated number of clusters obtained. |
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| Chart  Description automatically generated |
| **Supplementary Figure 58** |
| IBDMDB Correlation Plot from DADA2ASVs Assignment Method with Phenotype: Normal |
| Correlation plot based on the best estimated number of clusters obtained. |