**Supplementary File 1: Supplementary methods.**

**Random Forest Model Decision Tree Rules for Classifying Male Lithium Responders**

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Tree 1 Rule 1 Node 2 Decision All\_Other\_Patients

 1: RBPMS2 <= 8.04447

-----------------------------------------------------------------

Tree 1 Rule 2 Node 4 Decision All\_Other\_Patients

 1: RBPMS2 > 8.04447

2: LILRA5 <= 11.13405

-----------------------------------------------------------------

Tree 1 Rule 3 Node 5 Decision Male\_Responder

 1: RBPMS2 > 8.04447

2: LILRA5 > 11.13405

-----------------------------------------------------------------

Number of rules in Tree 1: 3

NULL

Random Forest Model 1

-------------------------------------------------------------

Tree 1 Rule 1 Node 2 Decision All\_Other\_Patients

 1: RBPMS2 <= 8.04447

-----------------------------------------------------------------

Tree 1 Rule 2 Node 4 Decision All\_Other\_Patients

 1: RBPMS2 > 8.04447

2: LILRA5 <= 11.13405

-----------------------------------------------------------------

Tree 1 Rule 3 Node 5 Decision Male\_Responder

 1: RBPMS2 > 8.04447

2: LILRA5 > 11.13405

-----------------------------------------------------------------

Number of rules in Tree 1: 3

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**Random Forest Model Decision Tree Rules for Classifying Female Lithium Responders**

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Tree 1 Rule 1 Node 4 Decision All\_Other\_Patient

1: ABRACL <= 9.95025

2: FHL3 <= 9.497515

-----------------------------------------------------------------

Tree 1 Rule 2 Node 8 Decision Female\_Responder

1: ABRACL <= 9.95025

2: FHL3 > 9.497515

3: FHL3 <= 9.590545

-----------------------------------------------------------------

Tree 1 Rule 3 Node 9 Decision All\_Other\_Patient

1: ABRACL <= 9.95025

2: FHL3 > 9.497515

3: FHL3 > 9.590545

-----------------------------------------------------------------

Tree 1 Rule 4 Node 6 Decision Female\_Responder

1: ABRACL > 9.95025

2: NBPF14 <= 8.37315

-----------------------------------------------------------------

Tree 1 Rule 5 Node 7 Decision All\_Other\_Patient

1: ABRACL > 9.95025

2: NBPF14 > 8.37315

-----------------------------------------------------------------

Number of rules in Tree 1: 5

NULL

Random Forest Model 1

-------------------------------------------------------------

Tree 1 Rule 1 Node 4 Decision All\_Other\_Patient

1: ABRACL <= 9.95025

2: FHL3 <= 9.497515

-----------------------------------------------------------------

Tree 1 Rule 2 Node 8 Decision Female\_Responder

1: ABRACL <= 9.95025

2: FHL3 > 9.497515

3: FHL3 <= 9.590545

-----------------------------------------------------------------

Tree 1 Rule 3 Node 9 Decision All\_Other\_Patient

1: ABRACL <= 9.95025

2: FHL3 > 9.497515

3: FHL3 > 9.590545

-----------------------------------------------------------------

Tree 1 Rule 4 Node 6 Decision Female\_Responder

1: ABRACL > 9.95025

2: NBPF14 <= 8.37315

-----------------------------------------------------------------

Tree 1 Rule 5 Node 7 Decision All\_Other\_Patient

1: ABRACL > 9.95025

2: NBPF14 > 8.37315

-----------------------------------------------------------------

Number of rules in Tree 1: 5

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