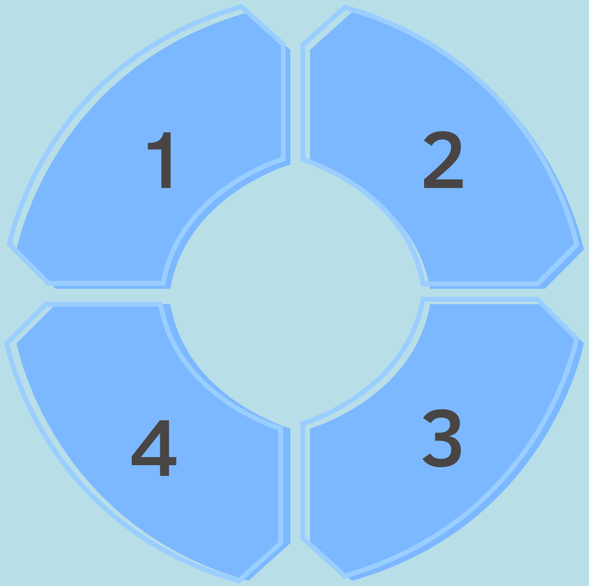
Identifying the Biomarkers for Congenital Heart Disease

Problem Statement

Identification of reliable and accurate biomarkers that can aid in the diagnosis and management of congenital heart disease

Proposed Solution

Finding and filtering articles



Handling bias

Manual Review

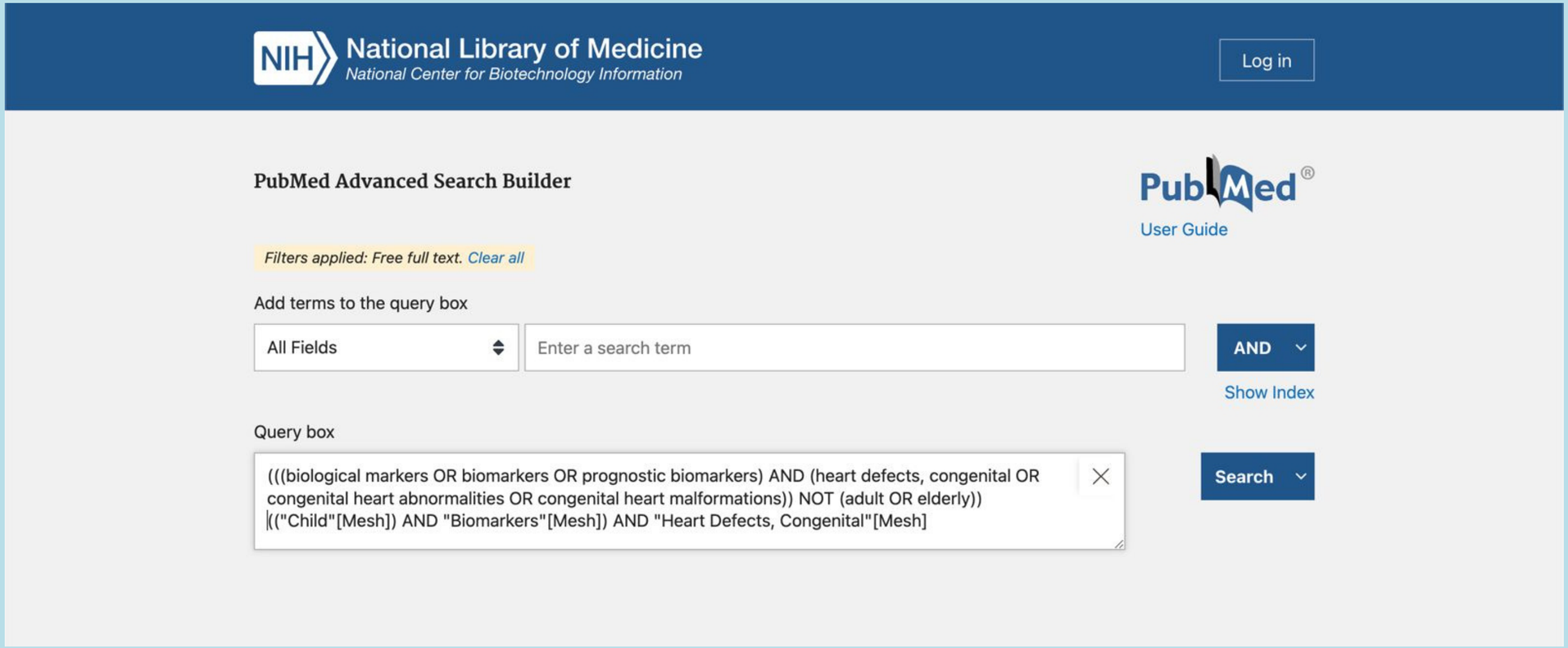
Named Entity Recognition

1

Finding and Filtering Articles

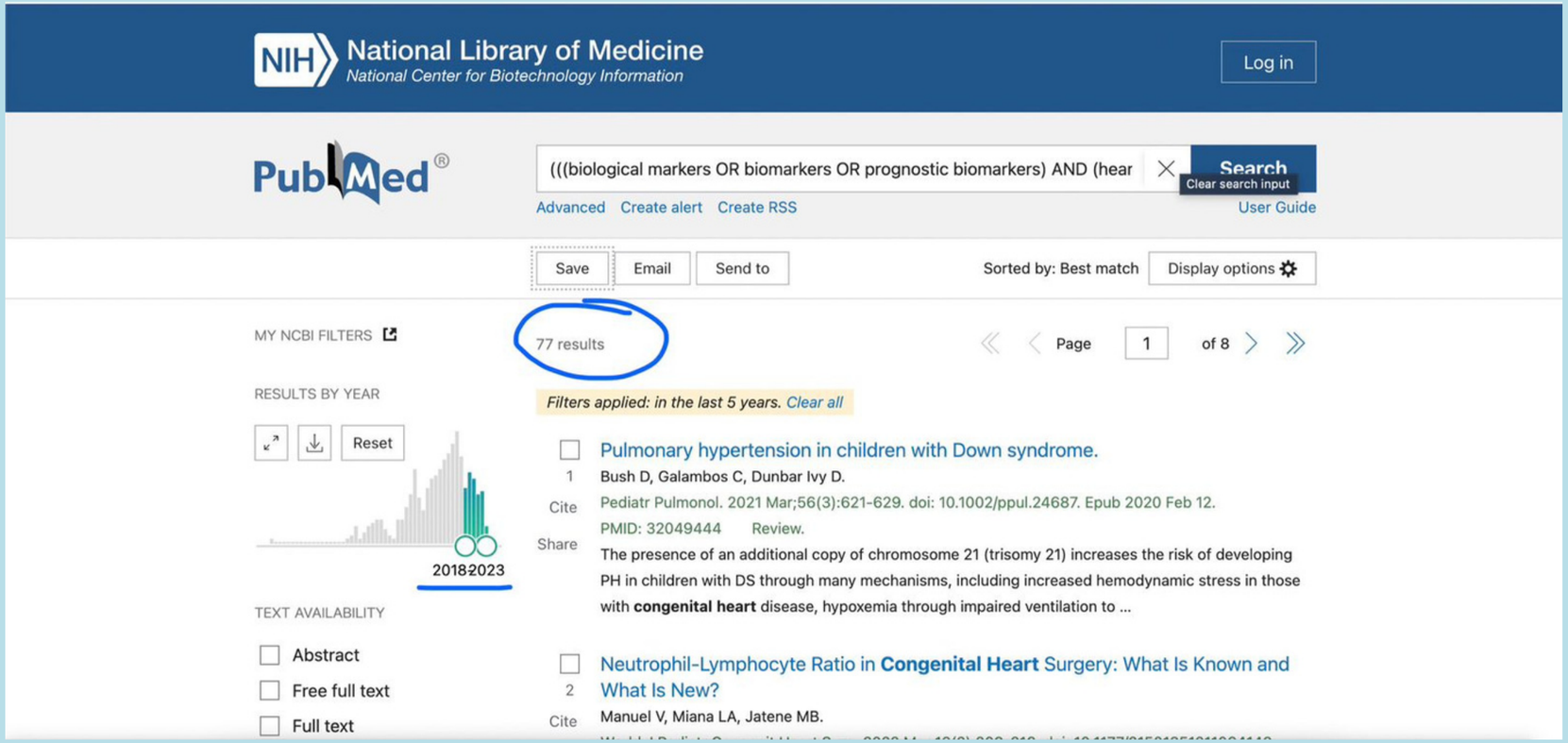
Performed by Nirmal, Vinayak Goel, Vinayak Arora and Ishan

Pubmed Search Query



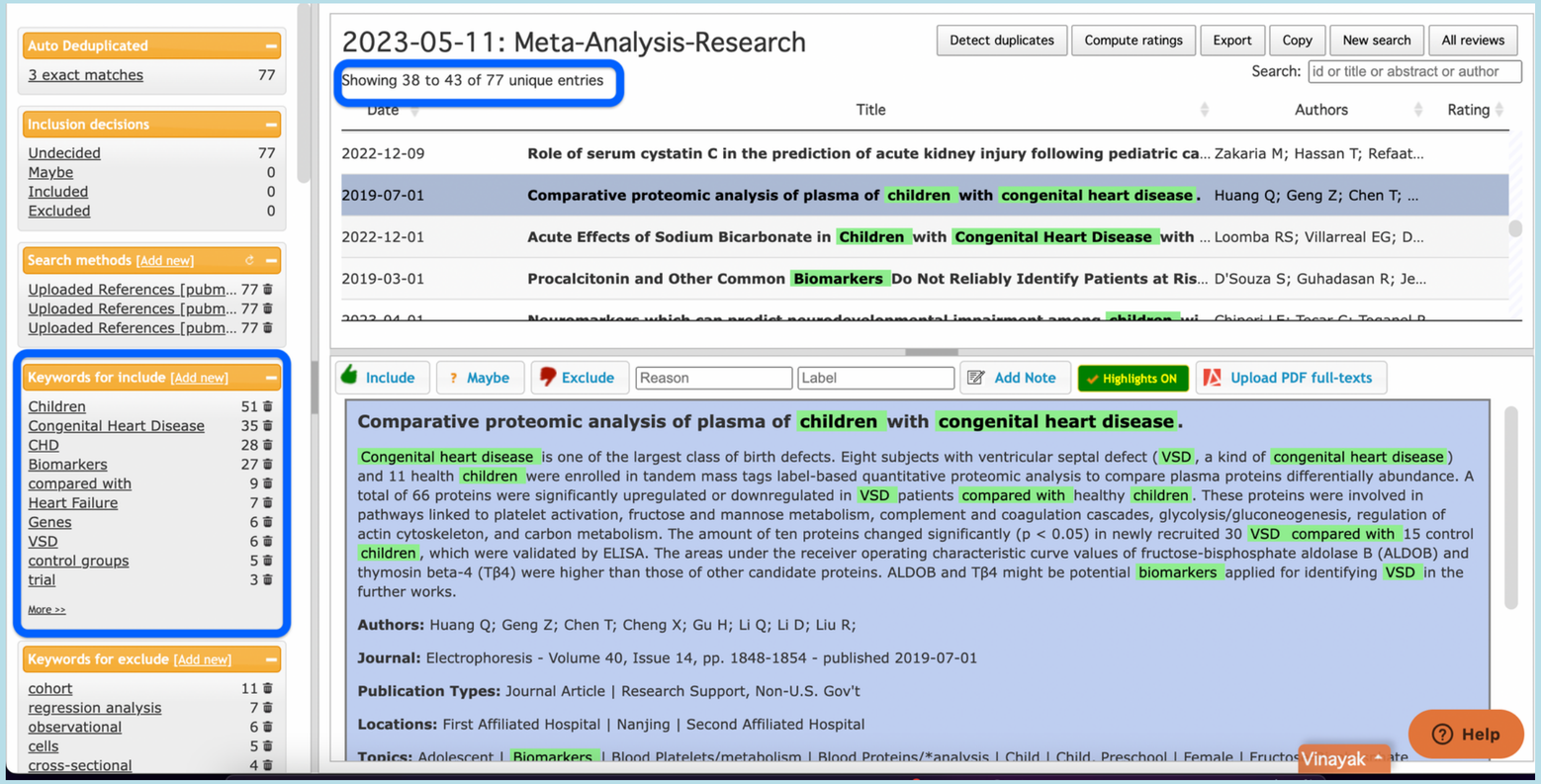
Created a search query using PubMedAdvanced Search Builder using keywords from our problem statement like Biomarkers, Congenital heart disease, Target Age

Pubmed Results



The search query fetched 77 results, with filters like papers from past 5 years and target age of under 23 months

Rayyan - Literature Review



Rayyan was used for screening the articles. The nbib files were uploaded to Rayyan.ai which used AI and NLP to filter out articles relevant to our research topic

2

Handling Bias in Studies

Performed by Arbaaz, Arman and Ieshaan

RoB2 for risk-of-bias

1. Randomization process
2. Deviations from intended interventions
3. Missing outcome data
4. Measurement of the outcome
5. Selection of the reported result

Intention-to-treat	Unique ID	Study ID	Experimental	Comparator	Outcome	Weight	D1	D2	D3	D4	D5	Overall
	11	11	-	-	biomarkers	1	+	!	+	+	!	!
	12	12	-	-	biomarkers	1	+	+	+	+	!	+
	13	13	-	-	biomarkers	1	+	+	+	!	+	+
	14	14	-	-	biomarkers	1	+	+	+	+	!	+
	15	15	-	-	biomarkers	1	!	+	+	+	!	!
	16	16	-	-	biomarkers	1	+	+	+	+	!	+
	17	17	-	-	biomarkers	1	+	+	+	+	+	+
	31	31	-	-	biomarkers	1	+	+	+	+	+	+
	32	32	-	-	biomarkers	1	+	+	+	+	+	+
	33	33	-	-	biomarkers	1	+	+	+	+	+	+
	34	34	-	-	biomarkers	1	!	+	+	+	+	!
	35	35	-	-	biomarkers	1	+	!	+	+	+	+
	36	36	-	-	biomarkers	1	+	+	+	+	+	+
	37	37	-	-	biomarkers	1	+	+	+	+	+	+
	38	38	-	-	biomarkers	1	+	+	!	+	+	+
	22	22	-	-	bimarkers	1	+	+	!	+	+	!
	24	24	-	-	biomakers	1	+	+	+	+	+	+
	23	23	-	-	biomarker	1	+	!	+	+	+	!
	25	25	-	-	biomarkers	1	+	+	+	+	+	+
	26	26	-	-	biomarkers	1	+	+	+	+	+	+

+ Low risk

! Some concerns

- High risk

D1 Randomisation process

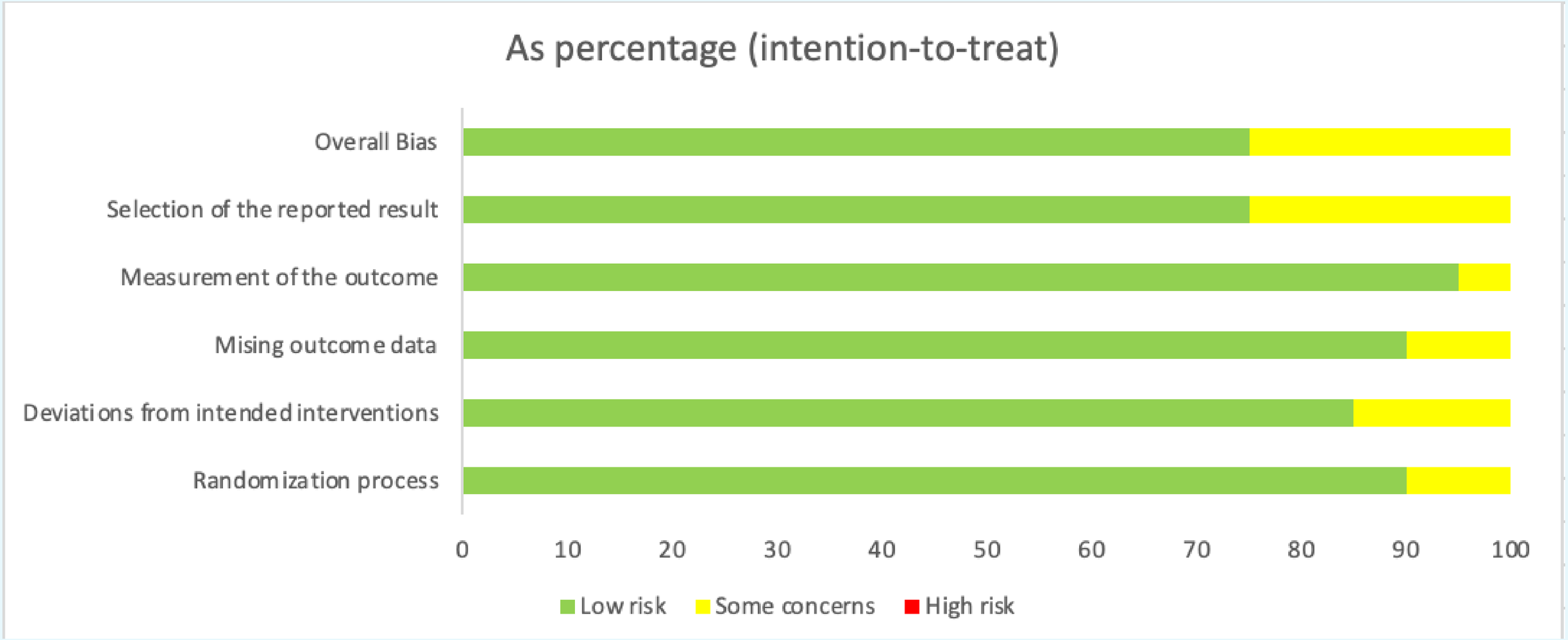
D2 Deviations from the intended interventions

D3 Missing outcome data

D4 Measurement of the outcome

D5 Selection of the reported result

Used RoB2 tool, as mentioned by the cochrane guidelines, for finding risk of bias in all the selected studies



No high risk studies were found. As a consequence, all selected studies were analyzed

3

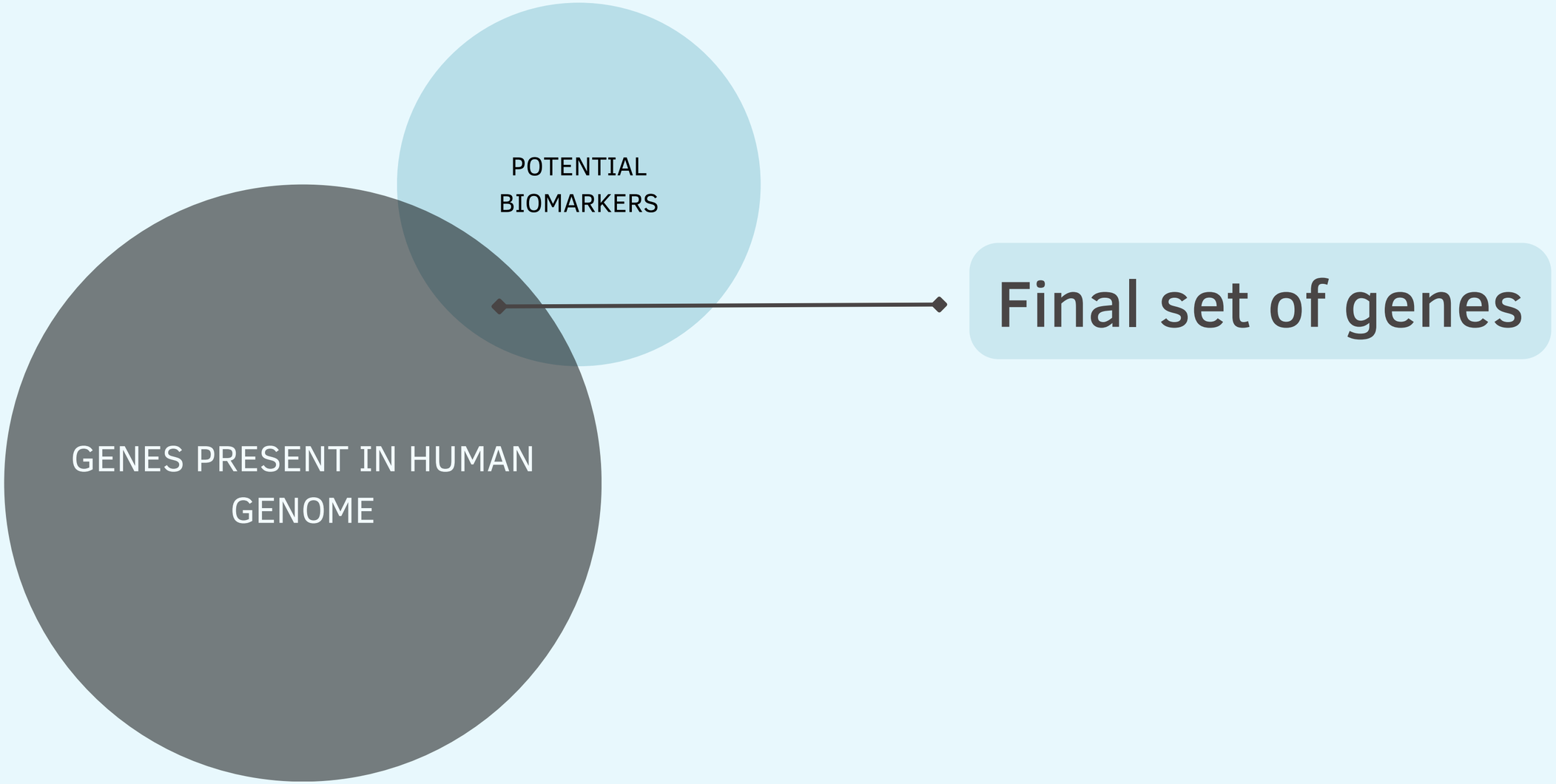
NER using ScispaCy

Performed by Harshil

Named Entity Recognition on studies to identify potential biomarkers

NER Model : *'en_ner_bionlp13cg_md'* trained on BIONLP13CG corpus

Finding the final biomarkers with biomaRt

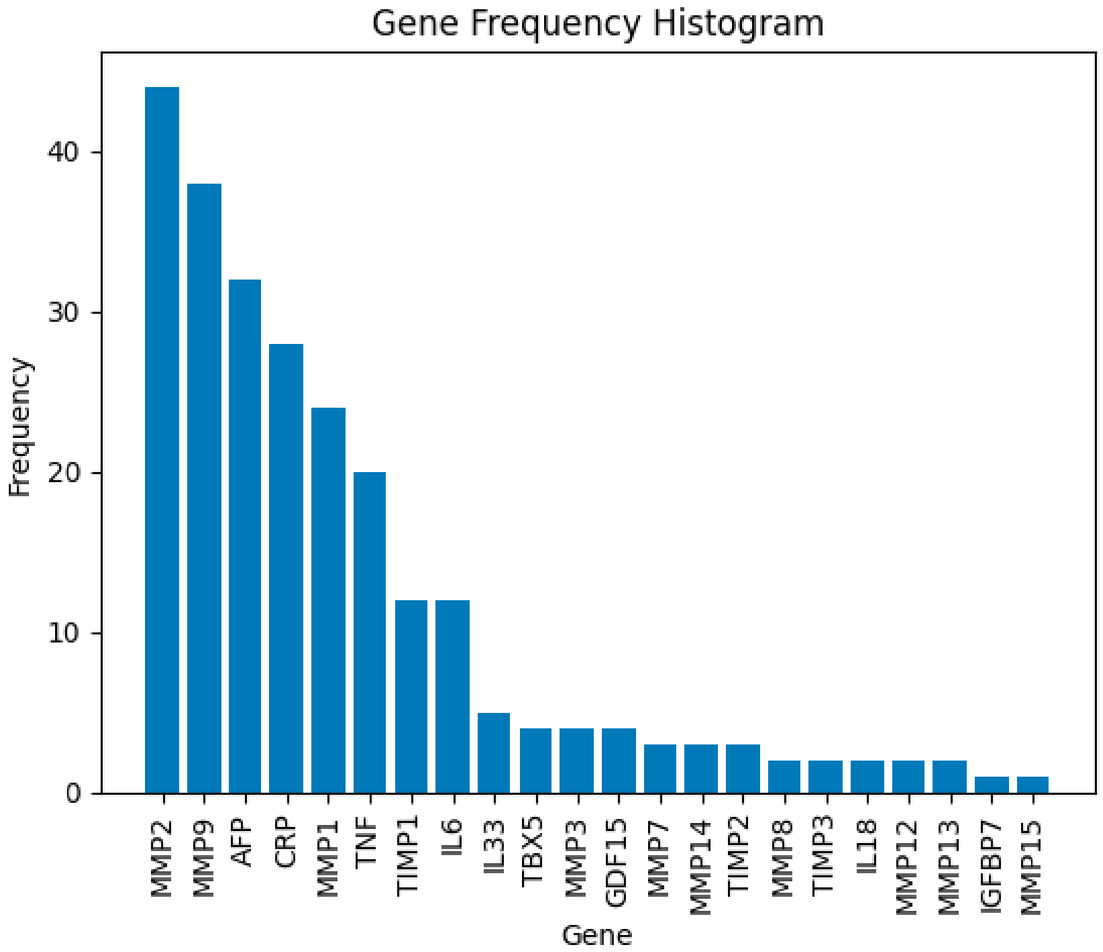


4

Manual Review

Performed by Everyone

Final Findings



Future Perspective

Moving forward, further research could involve functional studies, validation experiments, and potentially exploring the clinical applications of the identified biomarkers in a real-world setting.

Contributions & Acknowledgements

Arbaaz Choudhari (2021034) - Handling Bias in Studies
Arman Ganjoo (2021018) - Handling Bias in Studies
Harshil Mital (2021050)- NER using ScispaCy
Ieshaan Awasthy (2021054)- Handling Bias in Studies
Ishan Saini (2021465)- Finding and Filtering Articles
Nirmal (2021074) - Finding and Filtering Articles
Vinayak Arora (2021112) - Finding and Filtering Articles
Vinayak Goel (2021113) - Finding and Filtering Articles

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References for Project

Articles

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Documentation and Resources

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