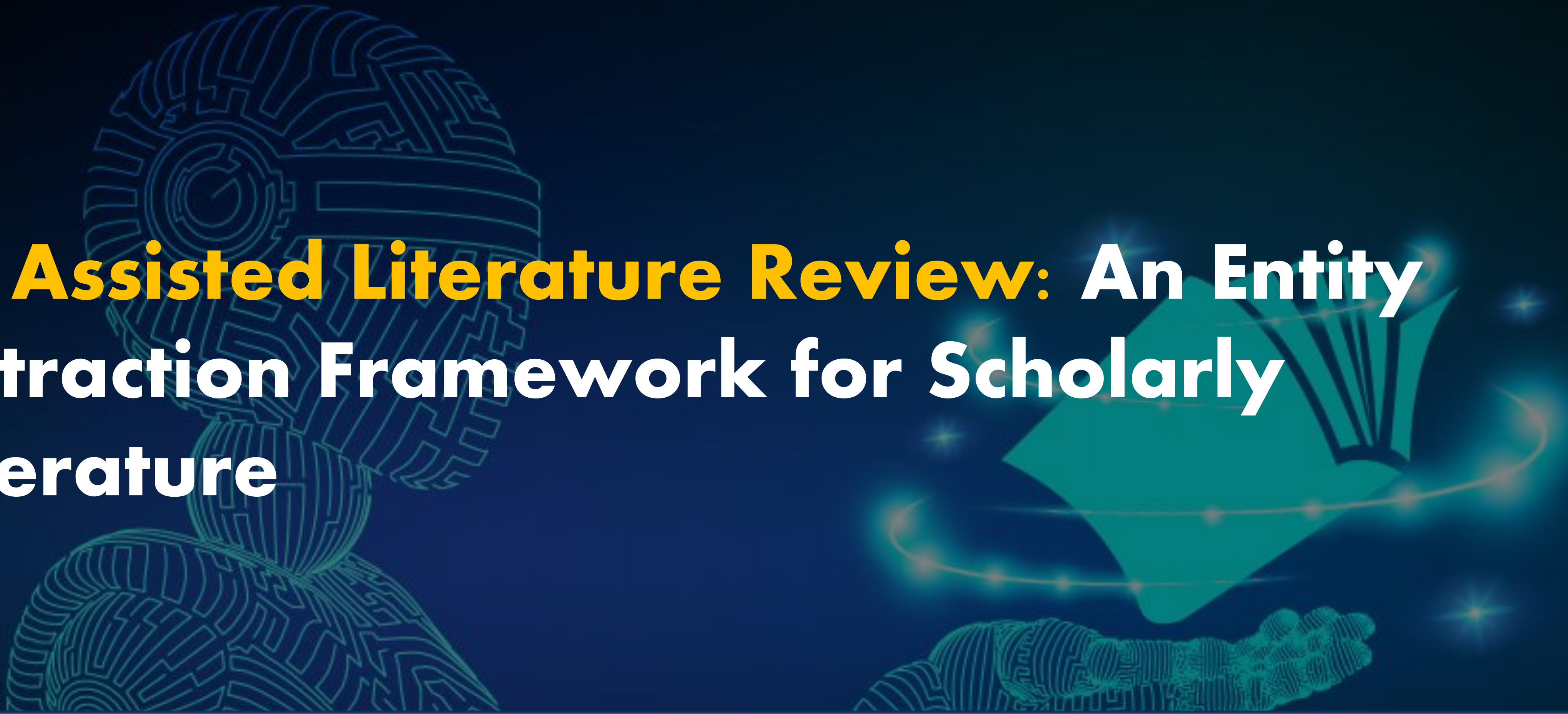
#semanticClimate
Transforming information into actionable knowledge

AI Assisted Literature Review: An Entity Extraction Framework for Scholarly Literature

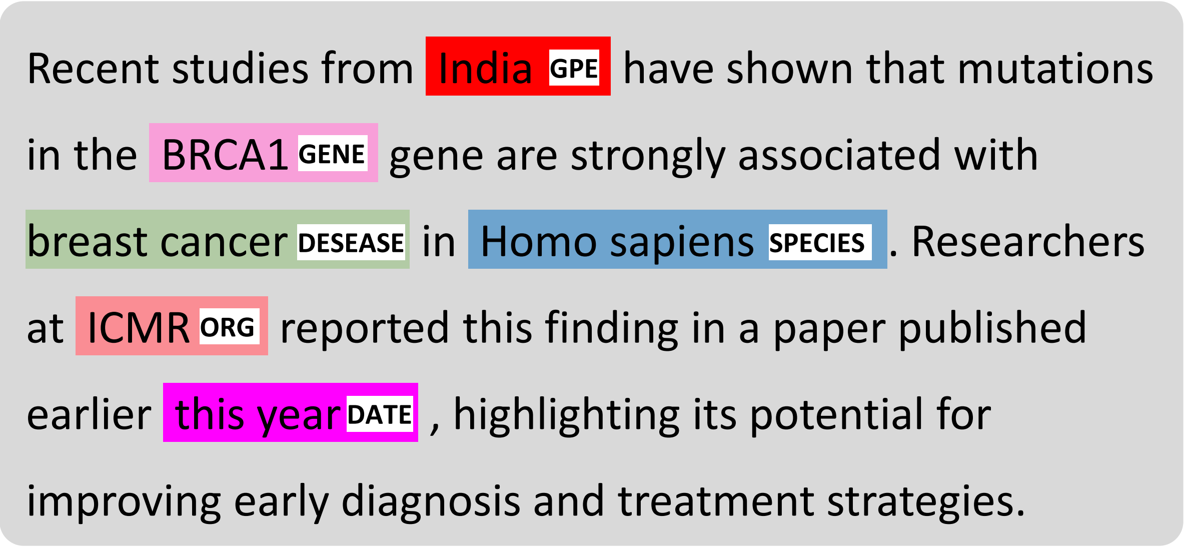


Presented by:
Moobashara Jawed

Named Entity Recognition (NER)

What is Entity Recognition?

Automated identification of key terms (entities) in text into categories like diseases, species or locations.



Recent studies from India GPE have shown that mutations in the BRCA1 GENE gene are strongly associated with breast cancer DESEASE in Homo sapiens SPECIES . Researchers at ICMR ORG reported this finding in a paper published earlier this year DATE , highlighting its potential for improving early diagnosis and treatment strategies.

■	GPE	■	GENE
■	DATE	■	DESEASE
■	ORG	■	Species

NER Workflow

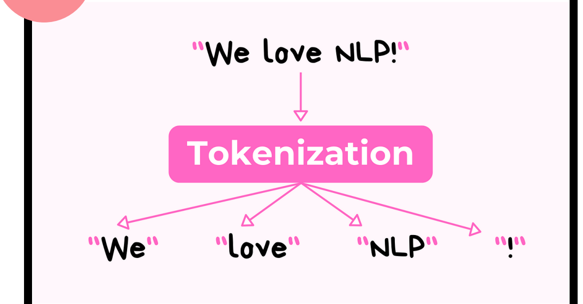
1

Automated article acquisition via **Pygetpapers**

2

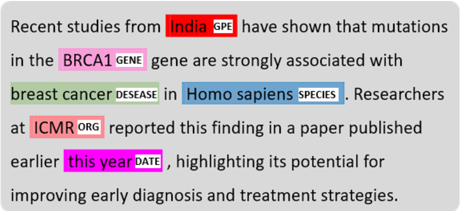
Document text extraction via PDF parsers

3



3. Text tokenization at sentence granularity

4



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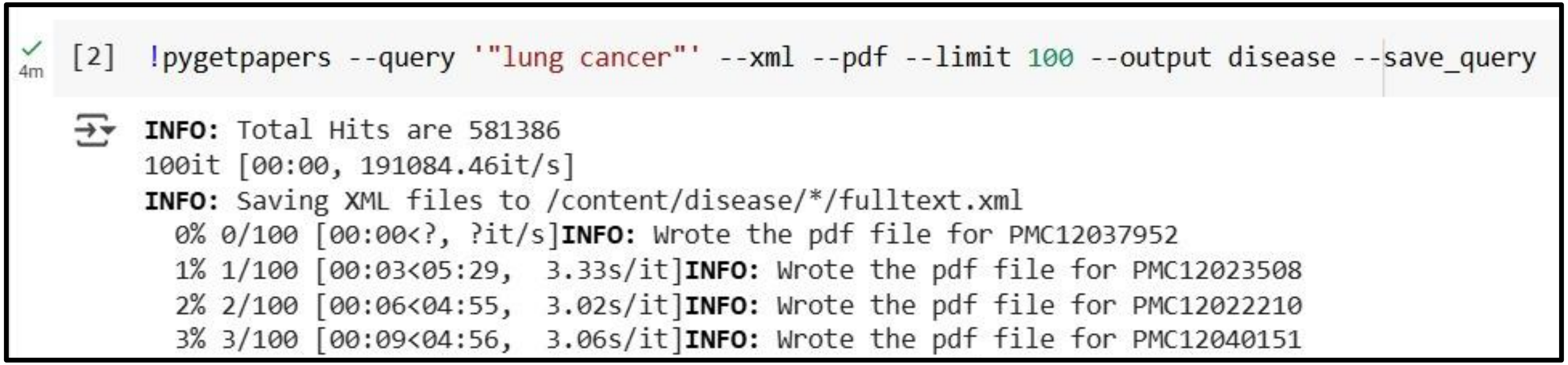
4. Named Entity Recognition (NER)

Step 1: Automated article acquisition via Pygetpapers`



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4m

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    INFO: Saving XML files to /content/disease/*/fulltext.xml
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      1% 1/100 [00:03<05:29,  3.33s/it]INFO: Wrote the pdf file for PMC12023508
      2% 2/100 [00:06<04:55,  3.02s/it]INFO: Wrote the pdf file for PMC12022210
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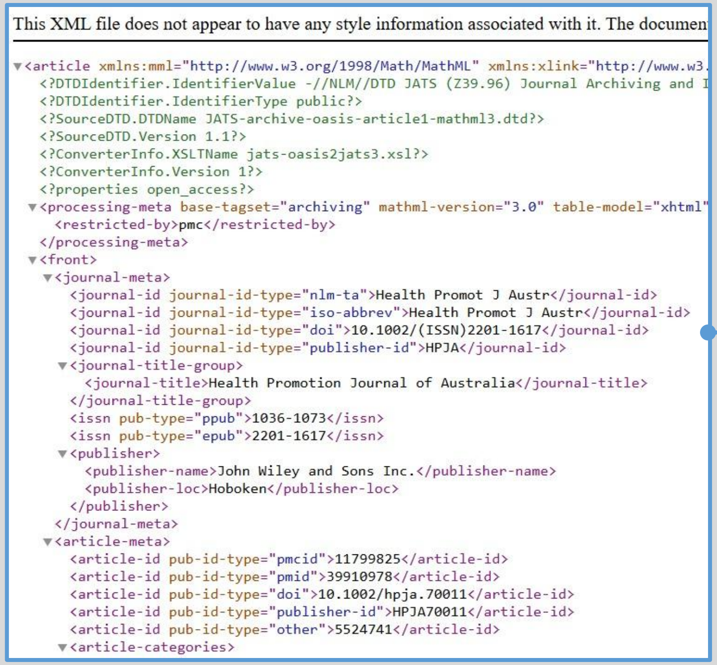

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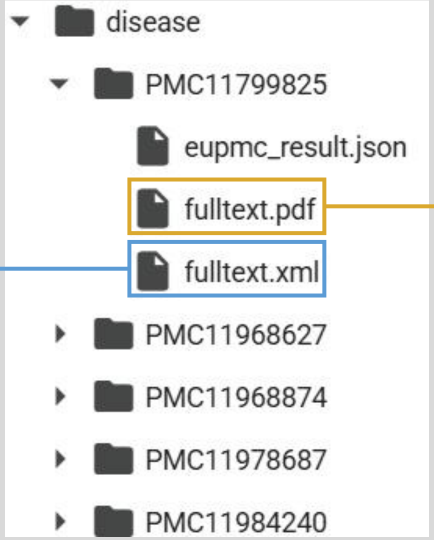

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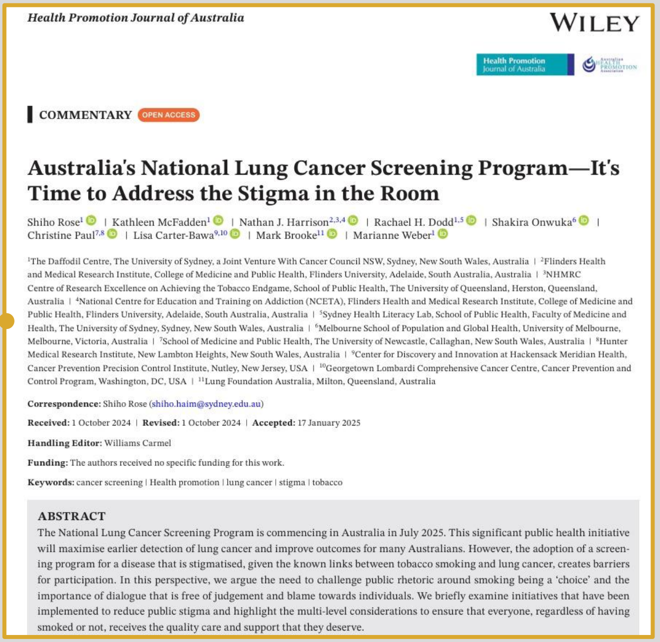

Health Promotion Journal of Australia

WILEY

COMMENTARY OPEN ACCESS

Australia's National Lung Cancer Screening Program—It's Time to Address the Stigma in the Room

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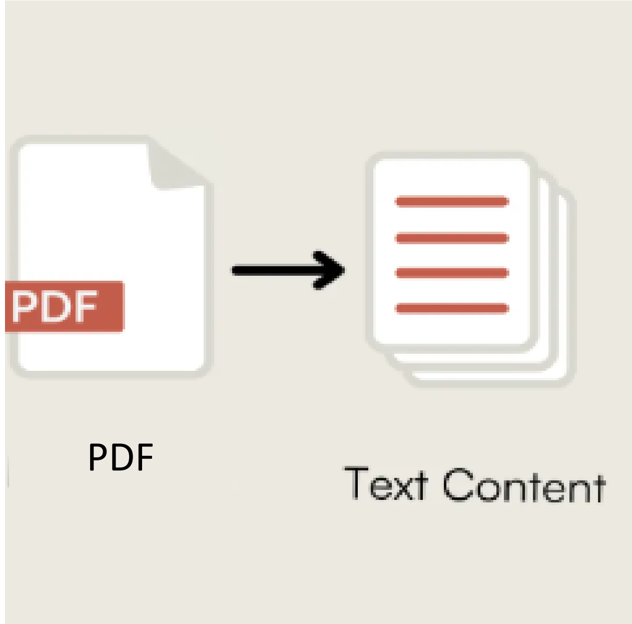
ABSTRACT

The National Lung Cancer Screening Program is commencing in Australia in July 2025. This significant public health initiative will maximise earlier detection of lung cancer and improve outcomes for many Australians. However, the adoption of a screening program for a disease that is stigmatised, given the known links between tobacco smoking and lung cancer, creates barriers for participation. In this perspective, we argue the need to challenge public rhetoric around smoking being a 'choice' and the importance of dialogue that is free of judgement and blame towards individuals. We briefly examine initiatives that have been implemented to reduce public stigma and highlight the multi-level considerations to ensure that everyone, regardless of having smoked or not, receives the quality care and support that they deserve.

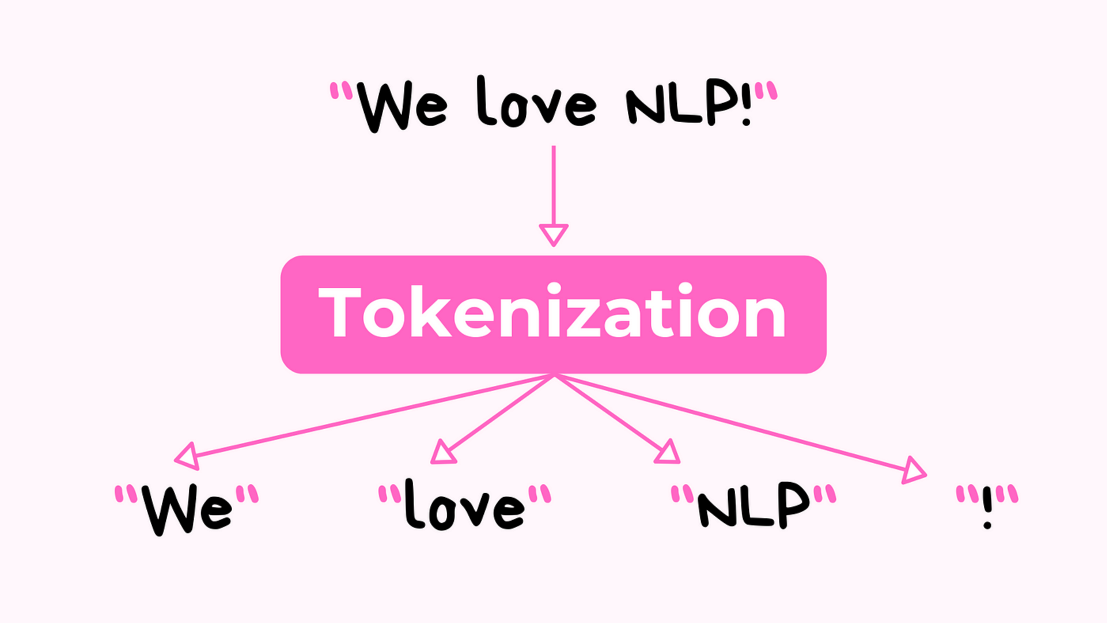
Step 2 & 3: PDF parsing and Text tokenization

2. Parsing is the process of extracting and structuring data from documents, such as PDFs.



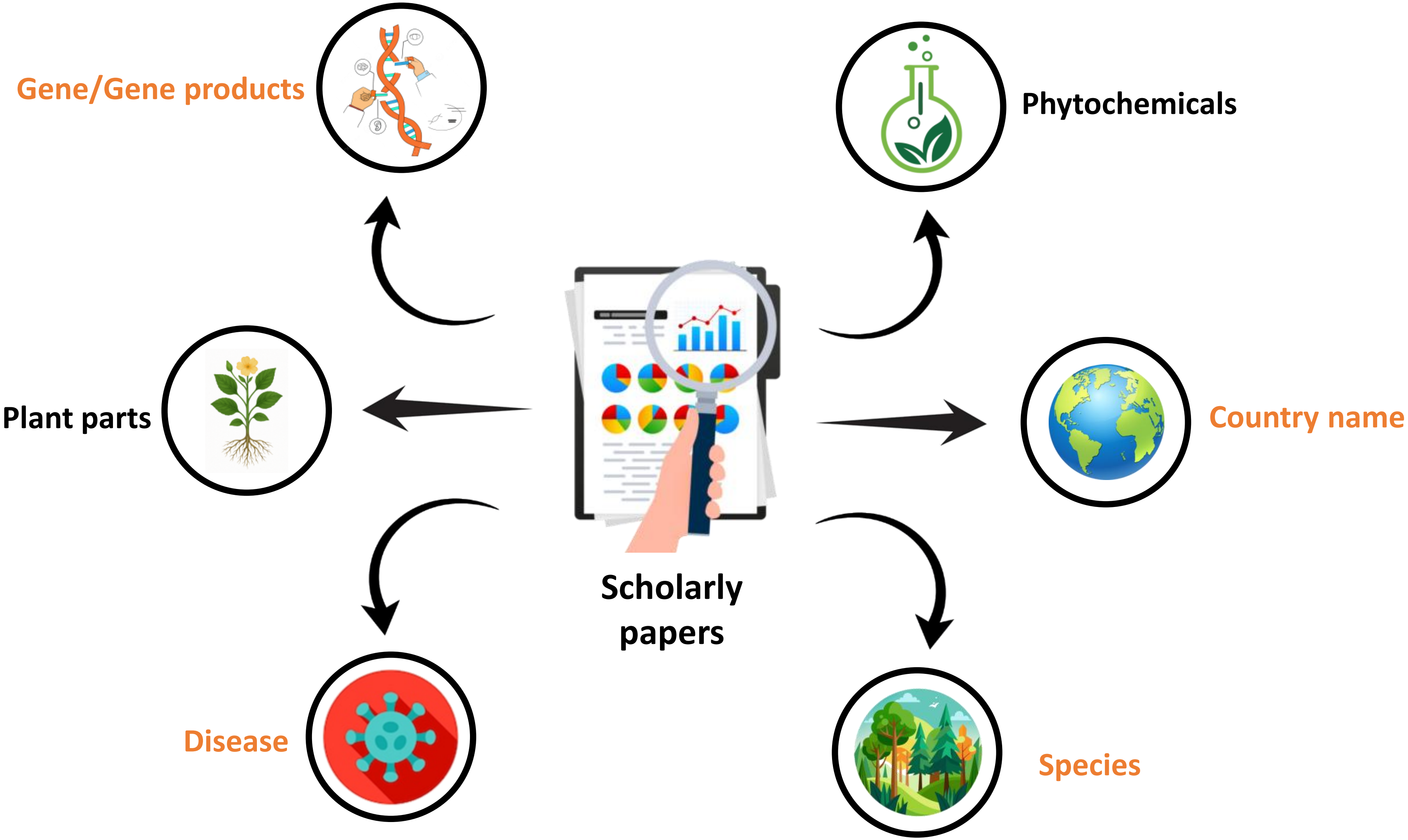
- ➢ PDF Parsing Packages: **fitz (from PyMuPDF)**
- ➢ **Fitz**: Extracts raw texts from pdfs

3. Tokenization is the process of splitting text into smaller units, such as sentences or words (tokens).



- ➢ Tokenization: **nltk.tokenize.sent_tokenize**
- ➢ Splits text into sentences

Step 4: Named Entity Recognition (NER)



Gene/Gene products

Phytochemicals

Plant parts

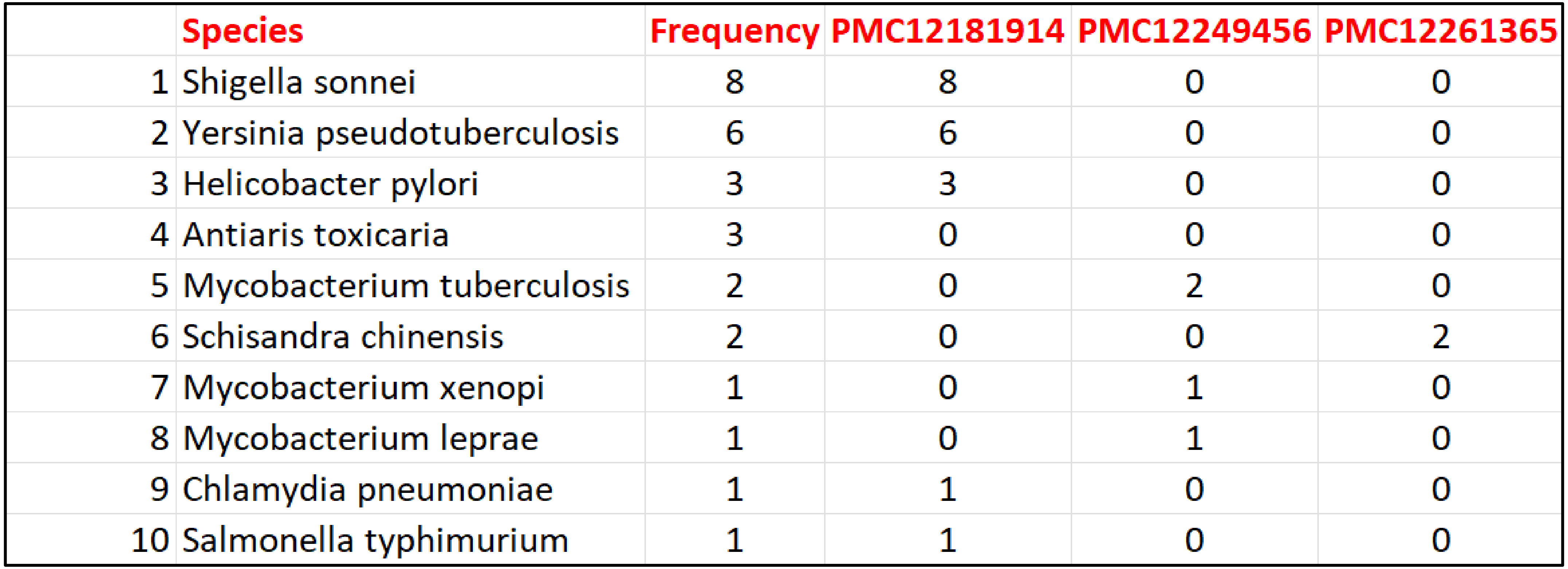
Country name

Scholarly papers

Disease

Species

Species Extraction

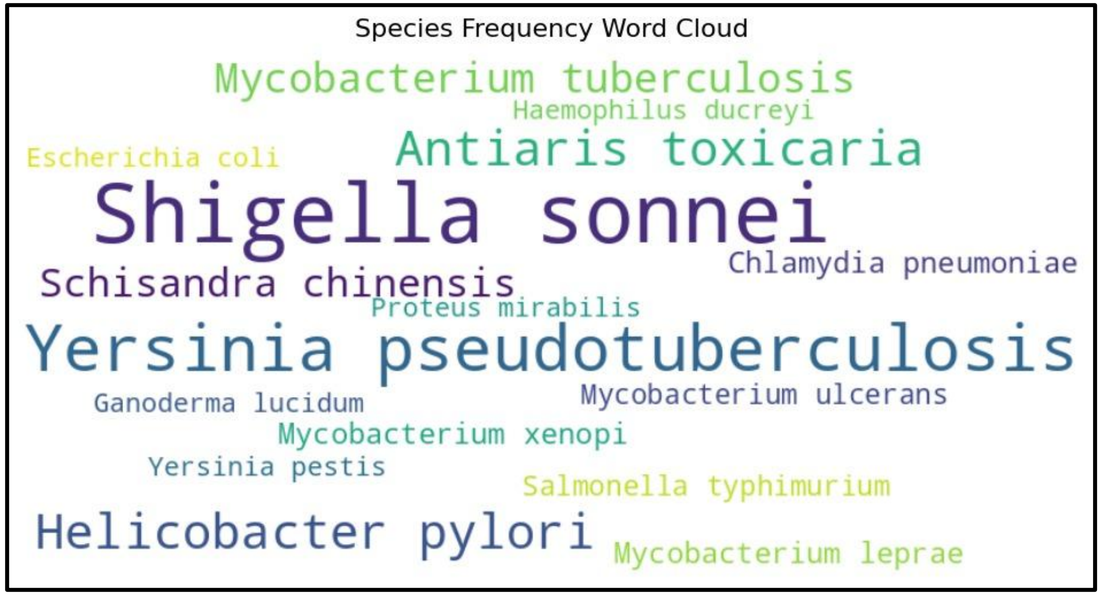


	Species	Frequency	PMC12181914	PMC12249456	PMC12261365
1	Shigella sonnei	8	8	0	0
2	Yersinia pseudotuberculosis	6	6	0	0
3	Helicobacter pylori	3	3	0	0
4	Antiaris toxicaria	3	0	0	0
5	Mycobacterium tuberculosis	2	0	2	0
6	Schisandra chinensis	2	0	0	2
7	Mycobacterium xenopi	1	0	1	0
8	Mycobacterium leprae	1	0	1	0
9	Chlamydia pneumoniae	1	1	0	0
10	Salmonella typhimurium	1	1	0	0

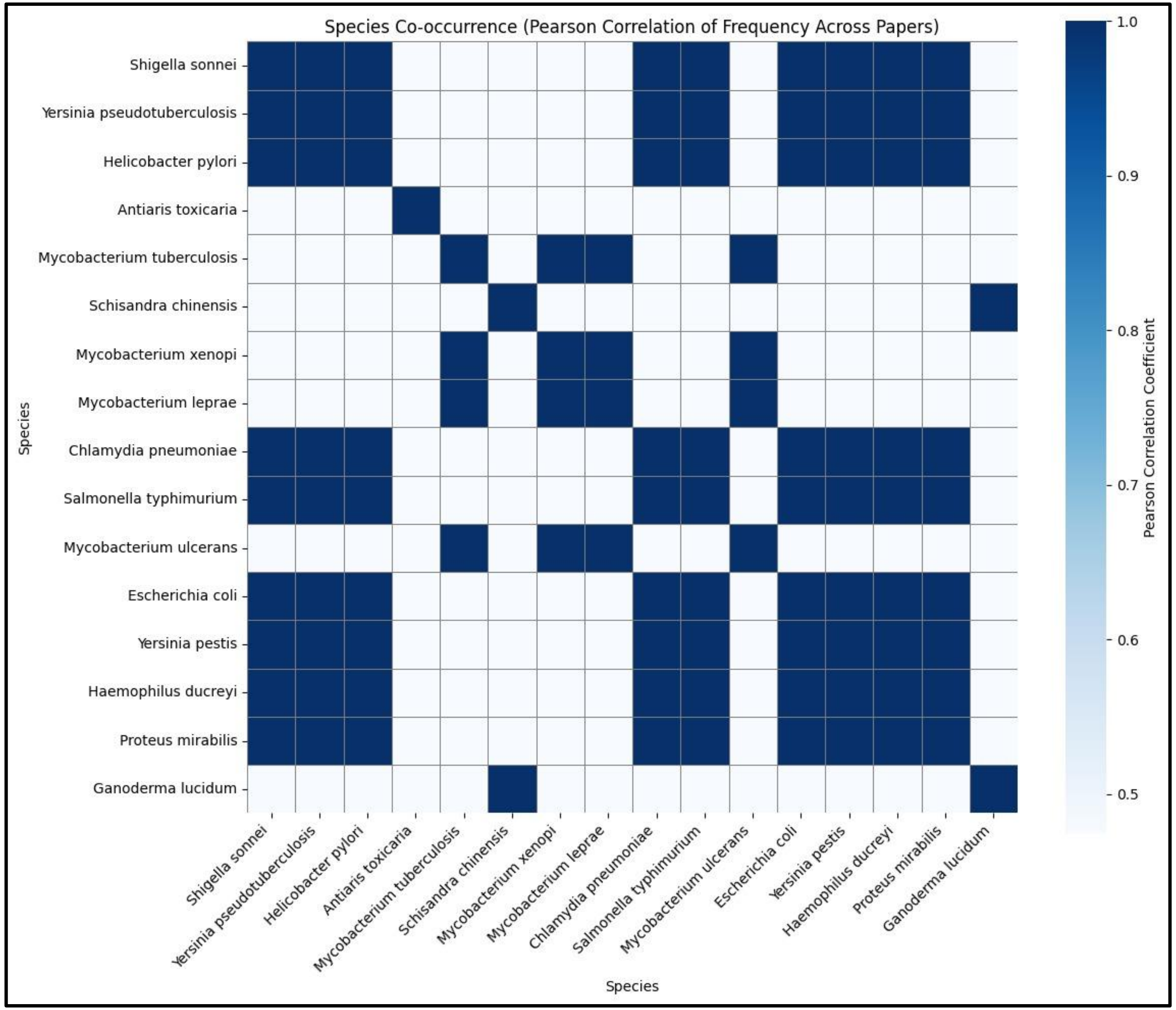
Frequency table showing the top 10 species across 3 PMCIDs out of the 50 papers

- NER Model: **scispaCy en_core_sci_md** (scientific text)
- Validation:
    - Regex for binomial nomenclature (Genus species)
    - **GBIF** API verification (EXACT species matches)

Species Extraction

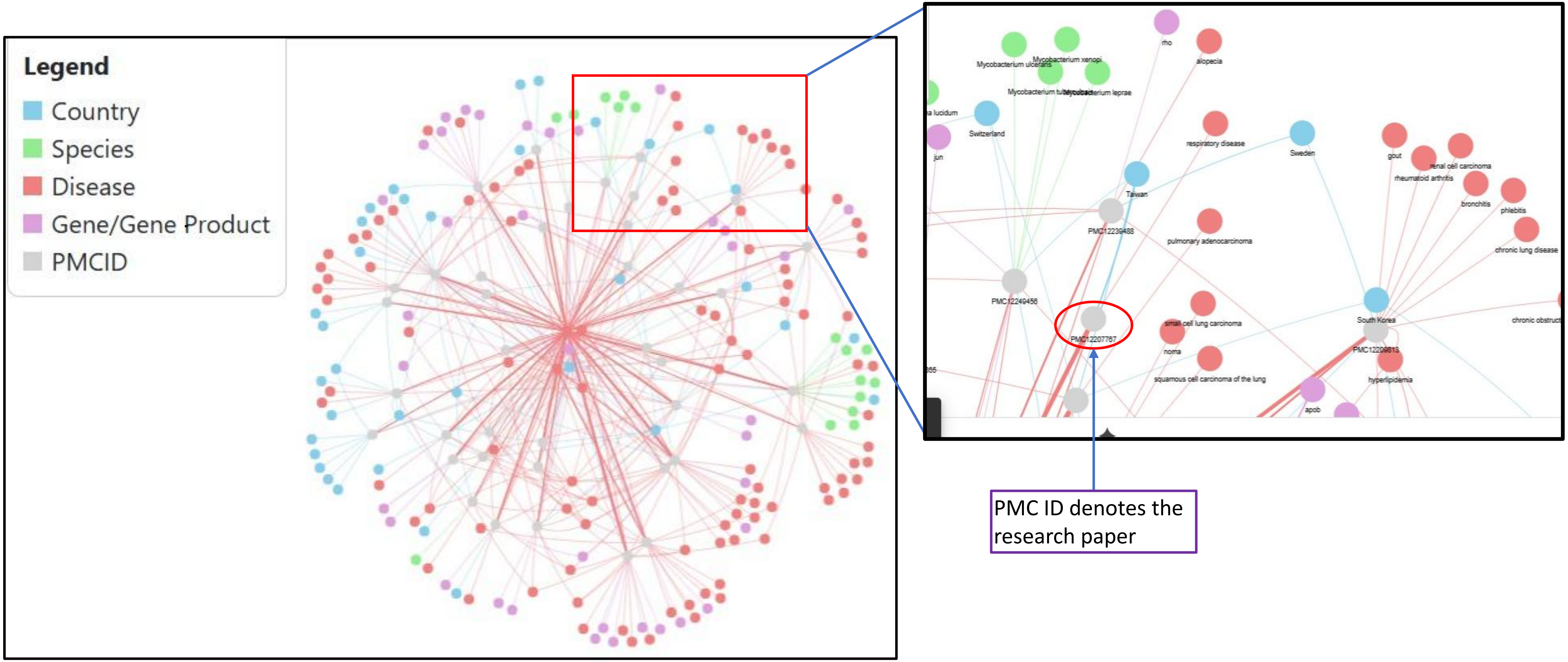


Word cloud of species obtained from the 50 papers



Co-occurrence plot of species for 50 papers

Network of the Extracted Entities



PMC ID denotes the research paper

THANK YOU

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