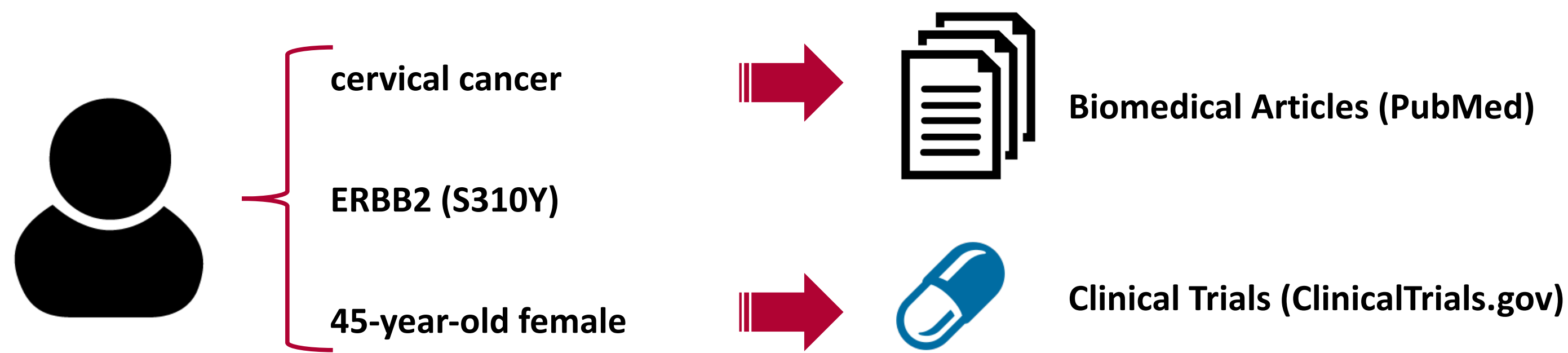
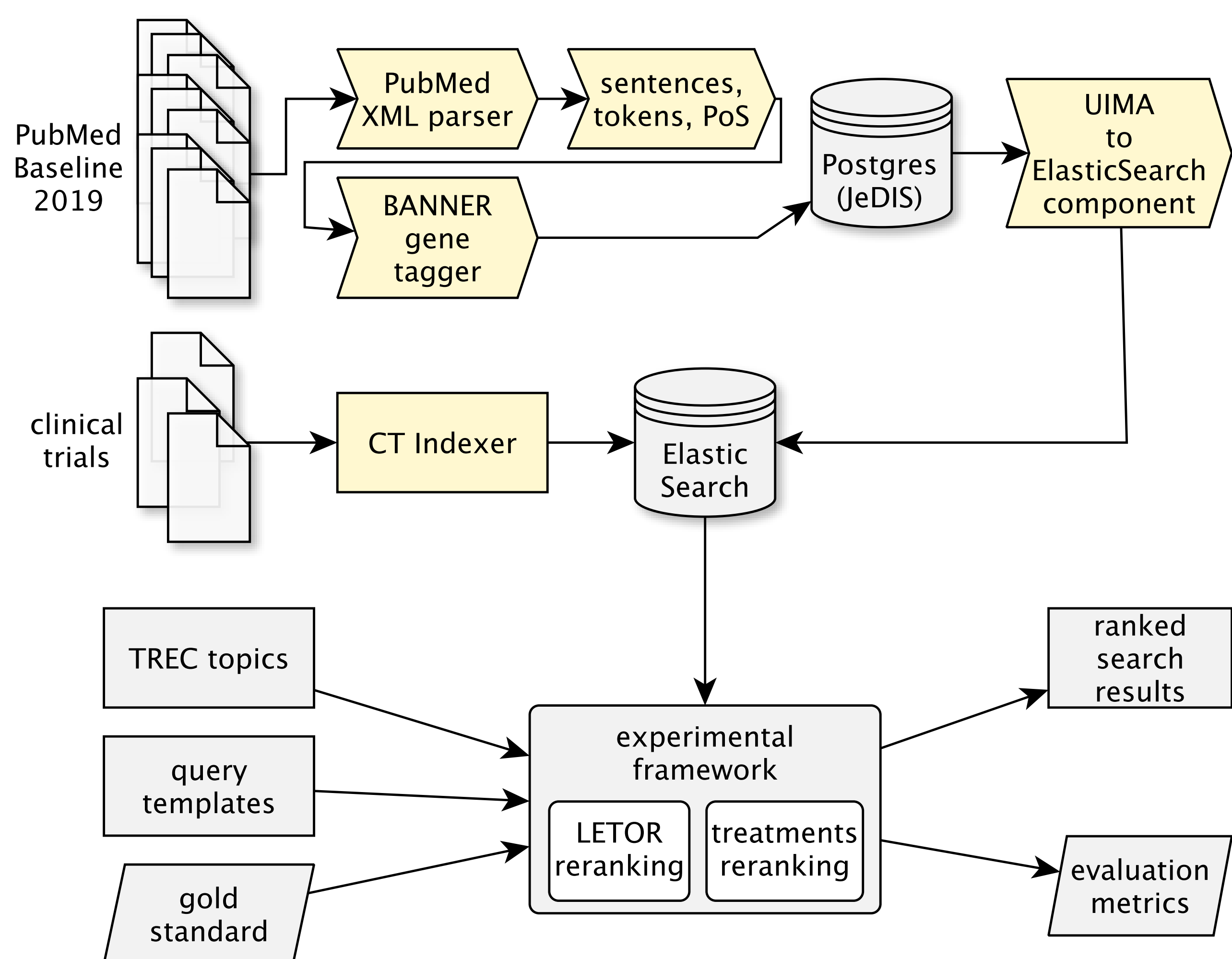


Goal: Find Relevant Biomedical Articles and Clinical Trials for 40 Topics



Experimental Framework



Baseline Retrieval Strategies

- Removal of domain stop words from query (e.g. cancer, cell)
- Hypernym and synonym weighting (using dis_max queries)
- Positive & negative keyword relevance signals
- Hand-crafted rules (e.g., solid tumors, gene family)

Topic Contents	Biomedical Articles	Clinical Trials
cervical cancer	carcinoma of cervix 0.1	0.1 preferred name
	cancer of the uterine cervix 0.1	0.1 synonym
1.0	CD340 0.7	0.1 synonym
ERBB2	long intergenic non-protein coding RNA 2064 0.1	0.1 description
	ERBB -	0.1 gene family

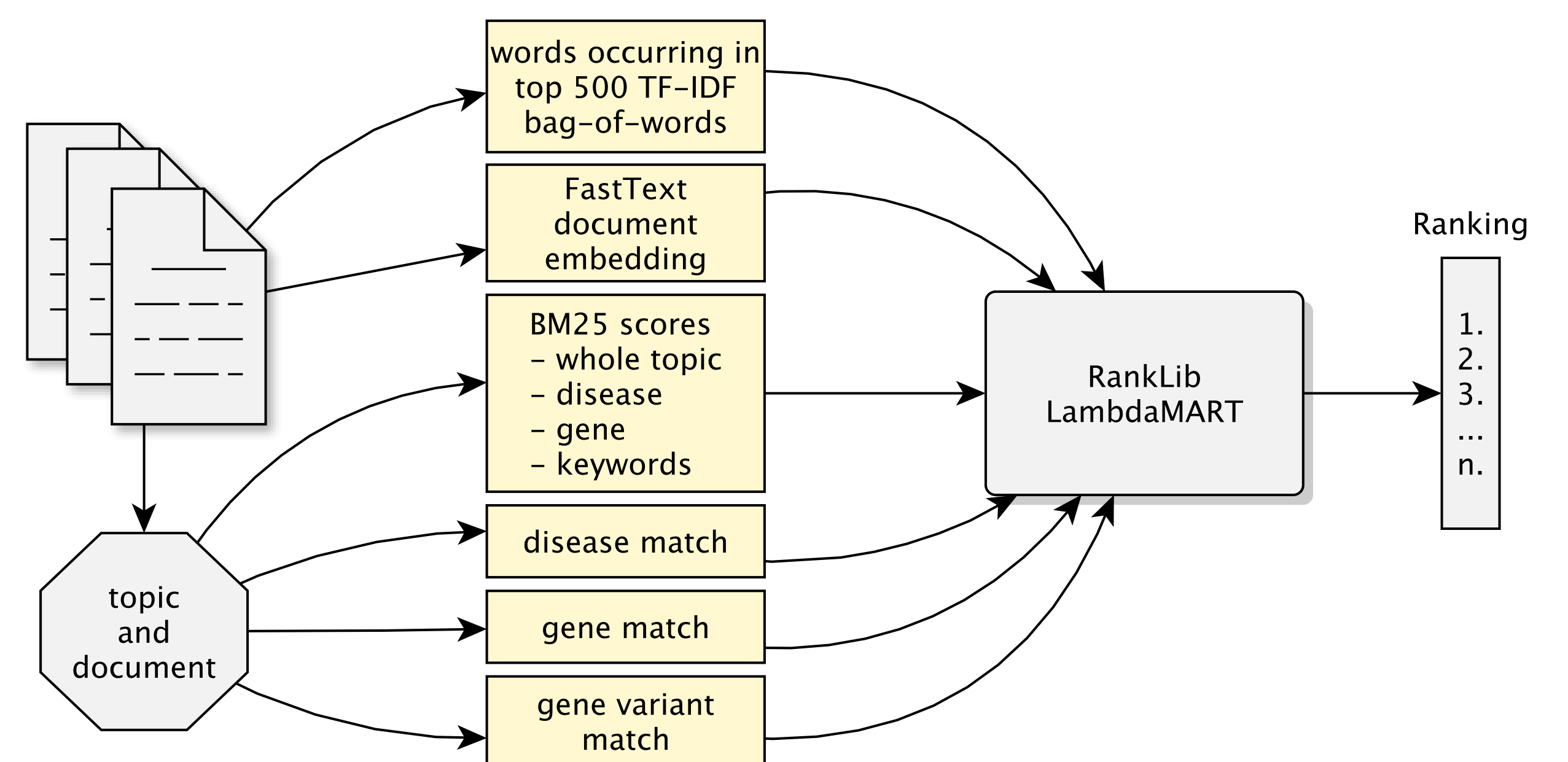
2019 Reference Standard: 2 Annotators

- 405 scientific abstracts (Cohen's kappa: 75.22%)
- 403 clinical trials (Cohen's kappa: 80.90%)

Treatment Reranking

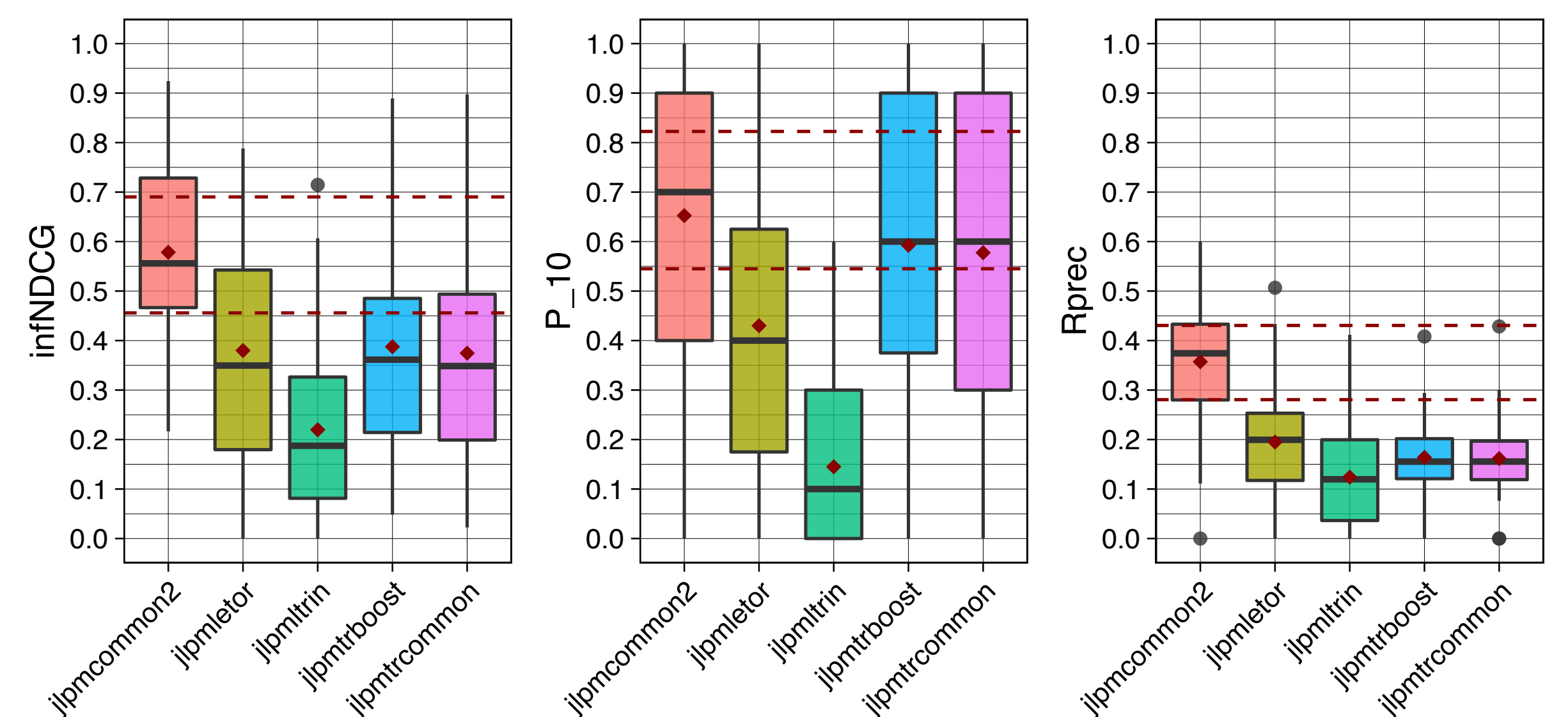
1. Semantic type filtering
2. Word removal: handcrafted blacklist of 230 words
3. Removal of treatments mentioned in higher positions
4. Treatment ranking by frequency
5. Removal of documents without treatments

Reranking: Learning to Rank (LETOR)



Results: Biomedical Articles

Strategy	jlpcommon2	jlpmletor	jlpmltrn	jlpmtboost	jlpmtcommon
Baseline strategies	Y	Y	Y	Y	Y
Filtered treatment match	Y	N	N	Y	N
LETOR training data	-	2017/18	2019	-	-
Treatments	-	-	-	11,128	9,443
Mean Top-10 Recall	-	-	-	0.2857	0.2698
Mean Top-10 F1	-	-	-	0.3118	0.3019
Mean Top-25 Recall	-	-	-	0.4603	0.4469
Mean Top-25 F1	-	-	-	0.3793	0.3716
infNDCG	0.5783	0.3798	0.2198	0.3876	0.3745
P@10	0.6525	0.4300	0.1450	0.5925	0.5775
R-Prec	0.3572	0.1948	0.1241	0.1639	0.1615



Results: Clinical Trials

Strategy	jltgenes	jltletor	jltltrn	jltphrase	jltprec
Baseline strategies	Y	Y	Y	Y	Y
Match all	Y	Y	Y	Y	N
Match extracted genes	Y	N	N	N	N
LETOR training data	-	2017/18	2019	-	-
infNDCG	0.6451	0.3731	0.4492	0.6244	0.6245
P@10	0.5474	0.2500	0.2921	0.5474	0.5447
R-Prec	0.4814	0.2066	0.2898	0.4799	0.4820

