

## Data Construction & Training



120k Biomedical  
Instruction Sets

5k Random  
Sampling



Sampled Biomedical  
Instruction Sets



API  
Calls

Self-Reflection  
Language Model



### Case of [No Retrieval]

Q. Classify the given radiology report according to which part of the body it is related to (e.g., chest, abdomen, brain, etc). The intervertebral discs at L4-L5 and L5-S1 are showing signs of degeneration with slight bulging impinging on the adjacent nerve root

A. **[No Retrieval]** The radiology report is related to the lumbar spine. **[Utility:5]**

### Case of [Retrieval]

Q. Summarize the key points about the role of BRCA1 and BRCA2 gene mutation in increased risk for breast cancer.

A. **[Retrieval]** <paragraph>... However, it is still undetermined whether BRCA1 and BRCA2 play similar important roles in sporadic breast cancer ... </paragraph> **[Relevant]** BRCA1 and BRCA2 gene mutations are associated with an increased risk of developing breast and ovarian cancers. **[Fully supported]** **[No Retrieval]** These mutations are responsible for the majority of hereditary breast cancers and also increase the risk for other types of cancer. **[Utility:4]**

Filter & Train

Domain-specific  
Instruction-tuned LM



## Inference

### MedQA

Q. She says she has **always been "large"** ... Her **main concern is her acne** ... she underwent a **glucose tolerance** test that showed a **plasma glucose level of 160 mg/dL (8.9 mmol/L) after 2 hours of a 75 g dose of oral glucose**. She has a **family history of type 2 diabetes mellitus** ... What is the most likely diagnosis of this patient?



Q + **1**

Q + **2**

Q + **3**



**Best evidence is selected with  
score of reflective tokens**

A. The most likely diagnosis of this patient is Polycystic ovarian syndrome (PCOS). The patient has the typical symptoms of PCOS, **such as acne, hirsutism, and obesity**. Additionally, she has a **family history of type 2 diabetes mellitus**, which is often associated with PCOS. The **glucose tolerance test result of 160 mg/dL (8.9 mmol/L) after 2 hours confirms impaired glucose tolerance**, which is another characteristic feature of PCOS.