R42 Institute Fellowship

No Code AI Application for Life Science - Patent Search

R42 Fellows on Superbio

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Superbio

- A platform for biomedical AI, easy to access and use

- Provides multiple AI-powered tools to:
  - Review biomedical literature
  - Formulate genomics scripts
  - Accurately design proteins
  - And more

Patenting is very hard

- Multiple time consuming steps
  - Searching for related patents/applications
  - Drafting a patent
  - Waiting for feedback from US Patent and Trademark Office (USPTO)
- Artificial difficulties
  - Patent attorneys invent words to confound

Hard for USPTO Attorneys too

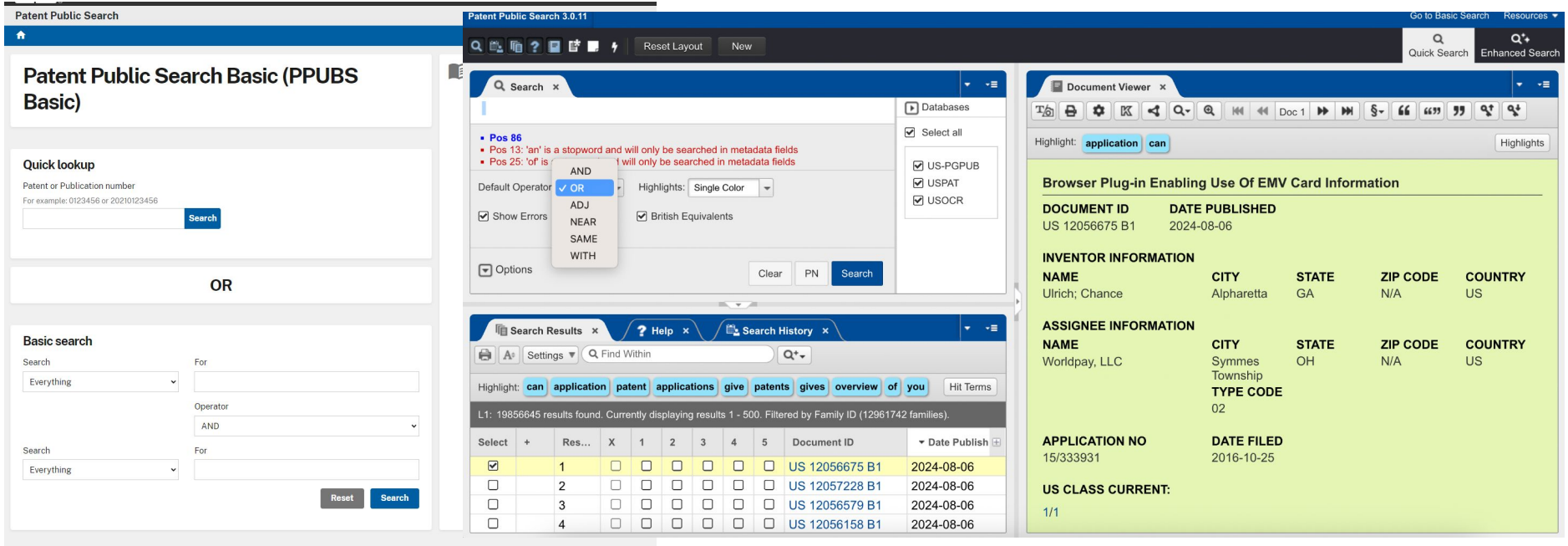
From the Patent Attorney's side:

- 35 USC
  - Can it be patented?
  - Is it similar to prior art?
  - Is it obvious?
- ANY ONE OF THE ABOVE CAUSES REJECTION

Searches are used everywhere

- USPTO patent attorneys must search
  - For relevant keywords
  - Across multiple documents
  - To identify meaning and metadata
  - For similar semantic meanings
- Intellectual Property (IP) lawyers need to search
- Bio / life science researchers need to search

Current search tools are flawed



Superbio's solution: a search tool

- Patent search tool to speed up
  - Identification of prior art
  - Identification of similar patents/applications
  - Summarization of patents

Patbio: Search quickly and easily

- Features
  - Summarize multiple relevant documents at once
  - Combined Semantic + Keyword Search
  - More intuitive
  - No code needed!

Keyword + Semantic search is powerful

- Allows tackling of “invented” words/terms with keyword search
- But still matches similar concepts (e.g. “running” is semantically similar to “jogging”)
- Best of both worlds

Uniquely easy and effective

- What makes it different
  - Simplifies process down to a single search
  - Allows natural language queries
  - Quickly provides examples of existing patents
  - Summarizes patents in the search
  - Integration with teams for better collaborative work

Demo

USPTO vs PatBIO Comparison

PatBio
Patent Search for Life Sciences

Provide FeedBack

Project:

Team:

Saved Patents:

Novartis - Kymriah

Search History:

Patented Drugs Targeting CD30

Tips:

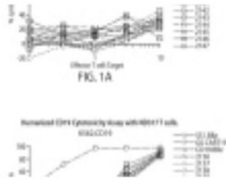
You can save relevant patents which will show up in the saved patents list!

You 8:30:49 PM

Can you give an overview of patent applications for CD19-targeting CAR-T therapies?

Patbio.ai 8:30:51 PM

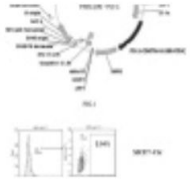
Here are some patents found based on your query



Title :TREATMENT OF CANCER USING ANTI-CD19 CHIMERIC ANTIGEN RECEPTOR
Publication Date :2019-12-26
Patent Number :US20190388471A1

VIEW PATENT DETAILS

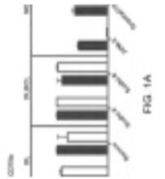
SEE PATENT



Title :PD-1 CAR-T CELL, PREPARATION METHOD THEREFOR, AND APPLICATION THEREOF
Publication Date :2019-04-25
Patent Number :US20190117691A1

VIEW PATENT DETAILS

SEE PATENT



Title :CHIMERIC ANTIGEN RECEPTORS TARGETING CD79B AND CD19
Publication Date :2022-02-17
Patent Number :US20220047636A1

VIEW PATENT DETAILS

SEE PATENT

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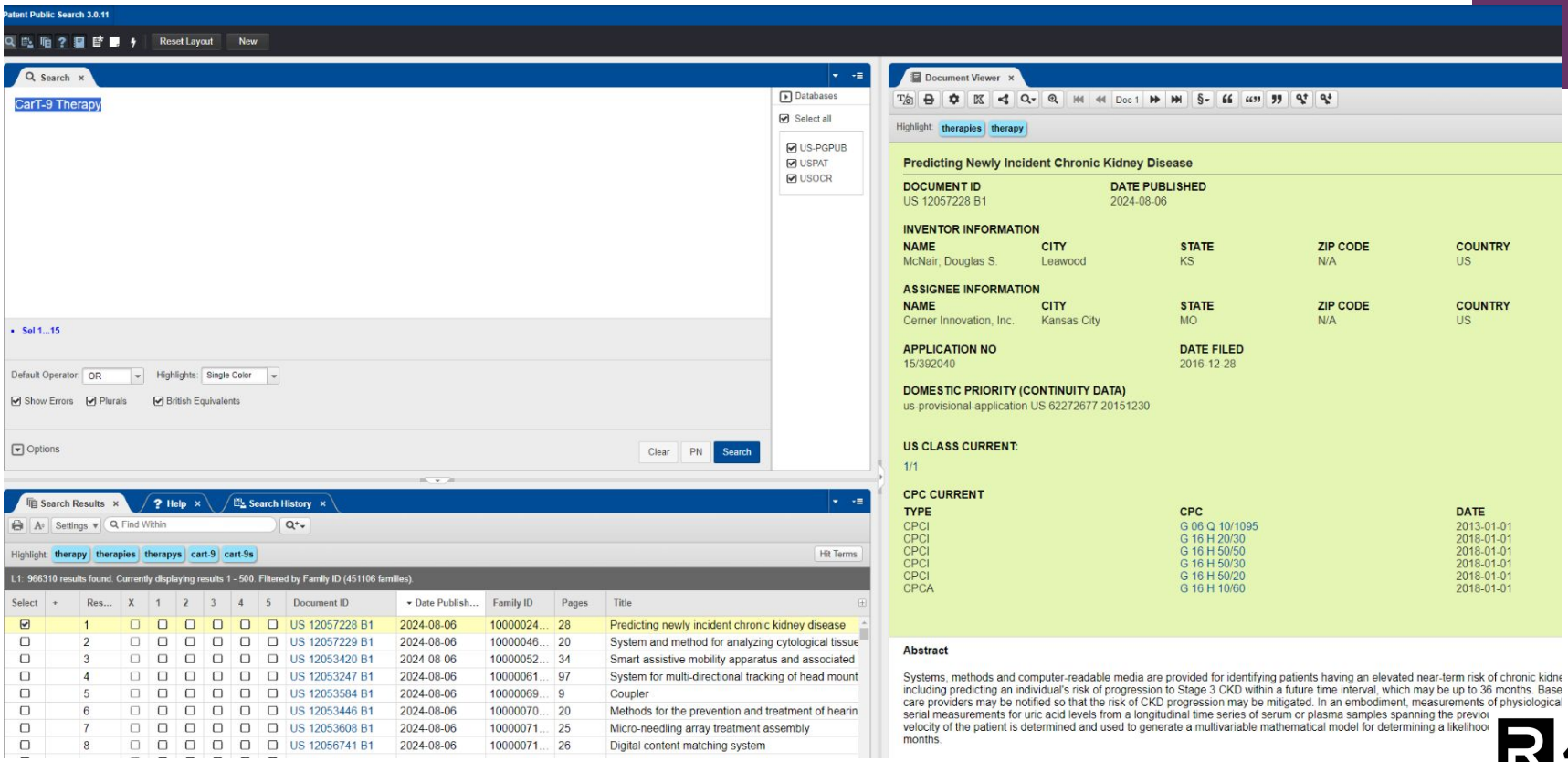
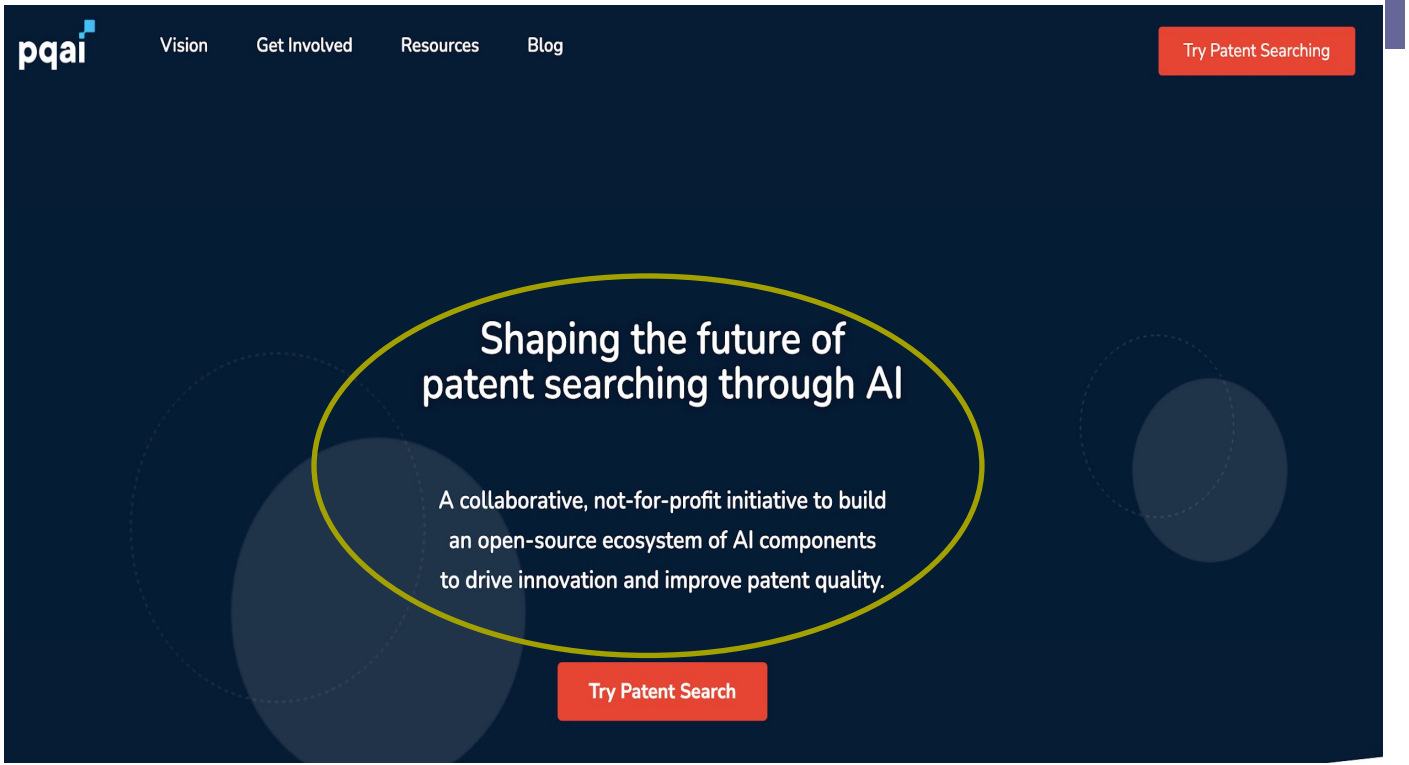
USPTO vs PatBIO Comparison

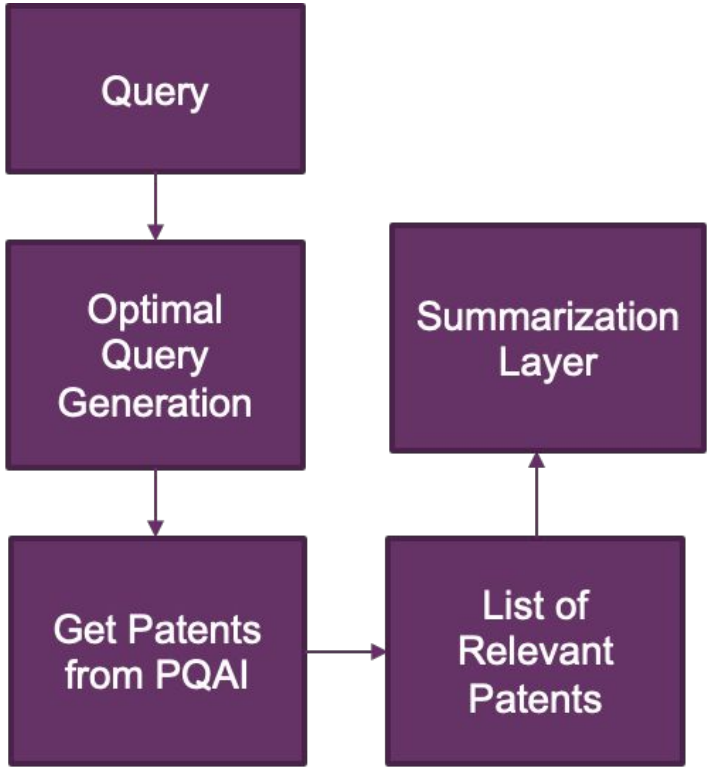


Patent Quality AI (PQAI)



Technical Specifications

- Front end was coded with React/Node.js
- Backend - Python, Google Cloud, Postgres
- Patent dataset powered by PQAI
- Use OpenAI for response summarization



Project challenges

- Identifying scale of the data
- Identifying what parts of the patent are
  - Useful
  - Not exceptionally large
- Figuring out what kind of model/backend to use
- How to improve search results
- Figuring out the needs of the users
- Developing an intuitive frontend

Further Refinements

- Improving and beta-testing UX
- Benchmarking against other patent search tools
- Patent Classification search (Search by topic)
- Include WIPO data (World Intellectual Property Organization)
- Integration on the superbio.ai platform

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PQAI

For providing access to their search backend

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Superbio.ai

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