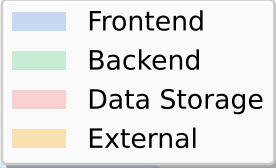# GenoCorr Platform Architecture

Frontend Layer

Gene Search **GO Analysis** **IVCCA** **Upload & Visualization**

Next.js 15.3.5 | React 19 | TypeScript

Backend Layer (FastAPI 0.68.0)

Gene Search API

/api Query mbols
/api/gene/symbol/search
/api/gene/add

GO Enrichment API

/api/ontology/analy Store
/api/ontology/theme-chart
/api/ontology/custom-analyze

IVCCA Analysis API

/api/ivcca/load-data
/api/ivcca/calculate-correlation
/api/ivcca/pca

API

Core Modules: GeneSearchAPI | GeneOntologyAPI | IVCCAAnalyzer | TwoSetCorrelation

Data Layer

MongoDB

Gene Expression Data

9 Tissue Types

File Storage

Excel/CSV/TSV

Pathway Files

External Services

GProfiler API

Analysis Libraries

Tech Stack: pandas | NumPy | SciPy | scikit-learn | matplotlib | seaborn