GULBENKIAN CIÊNCIA

# PO: Precision Oncology Course

## Running PanDrugs

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cnio stop cancer

# PanDrugs

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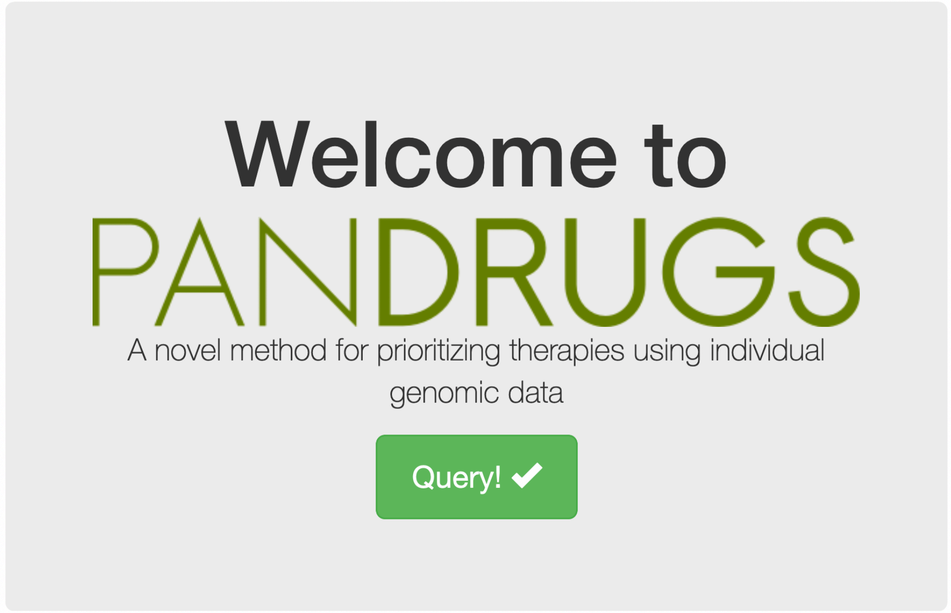
www.pandrugs.org

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PanDrugs is a web tool for **prioritizing cancer therapies** based on **individual genomics data**.

# PanDrugs

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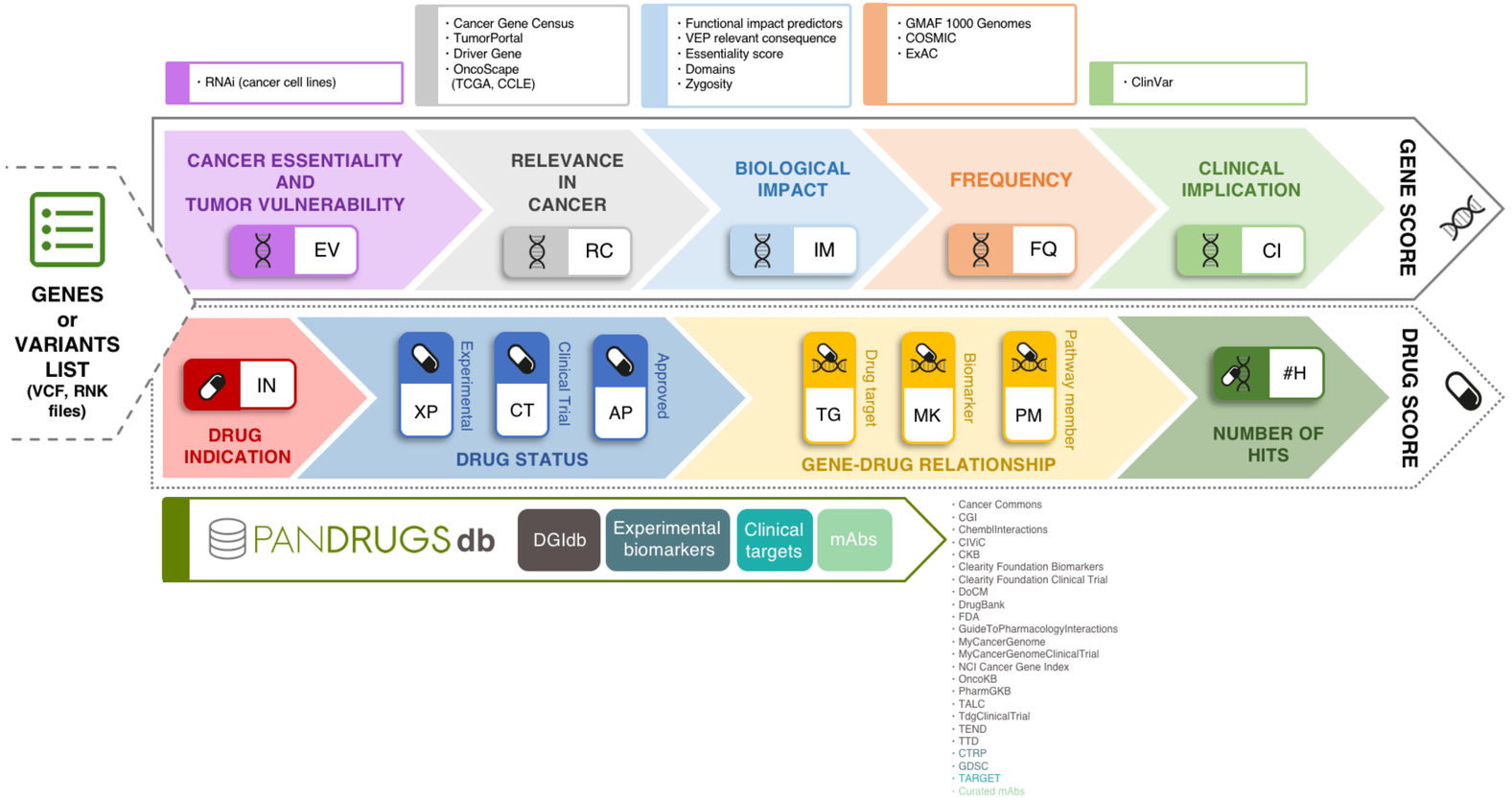
- **GScore (0 to 1):** Measures the **relevance of genetic variants in cancer**.
- **DScore (-1 to 1):** Measures the **drug efficacy** against different targets.



# PanDrugs

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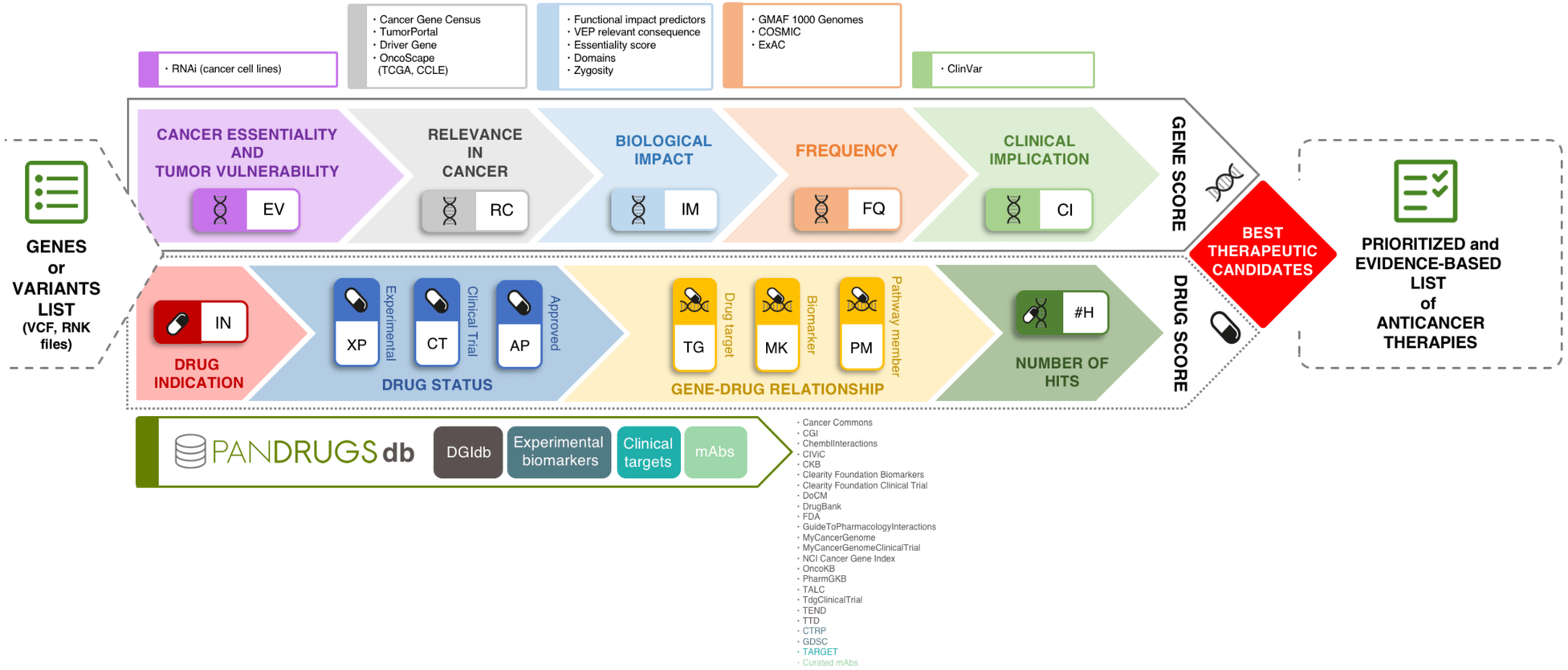
**Based on these two scores**, PanDrugs outputs a ranking of the **best therapeutic candidates** for a particular patient.



# Input 1: Gene list

PANDRUGS

## Steps

1. **Query PanDrugs using the Genes section**
2. **Load Example 3 (Genes Involved in PI3K-AKT-mTOR pathway)**
3. **Query the database with these genes**

# Questions

PANDRUGS

## Input 1: Gene list

- **Are all the genes in PanDrugs? How many drugs are in each approval status?**
- **Which is the most abundant mechanism of action?**
- **How can we find the best therapeutic candidates?**
- **Where are the evidences for these best therapeutic candidates?**
- **Is there any drug suggested by a gene that is discarded by another?**

# Input 2: Gene ranking

PANDRUGS

## Steps

1. **Query PanDrugs using the Gene Ranking section**
2. **Load Example file (Expression data for the top 500 up-regulated genes in a lung adenocarcinoma patient with *EGFR* alteration from TCGA)**
3. **Query the database with these genes**

# Questions

PANDRUGS

## Input 2: Gene ranking

- **How many genes are in PanDrugs?**
- **Which are the best candidates according to PanDrugs?**
- **What are the evidences for the drugs that rank higher in the assignments?**
- **Is there any drug approved for the same cancer type?**

# Input 3: VCF

## Steps

PANDRUGS

1. **Query PanDrugs using the Genomic Variant section**
2. **Load Example file (VCF of melanoma patient with mutant *BRAF* from TCGA)**
3. **Query the database with this file**

# Questions

PANDRUGS

## Input 3: VCF

- **Which are the suggested therapies? Do they match the specific alterations?**
- **What are the evidences for the gene with the highest GScore in the first best therapeutic candidate?**
- **Is there any drug suggested by a gene that is discarded by another?**
- **Is there any drug approved for the same cancer type? Is there any drug in cancer clinical trials for this cancer type?**
- **Could a drug repositioning approach be used?**

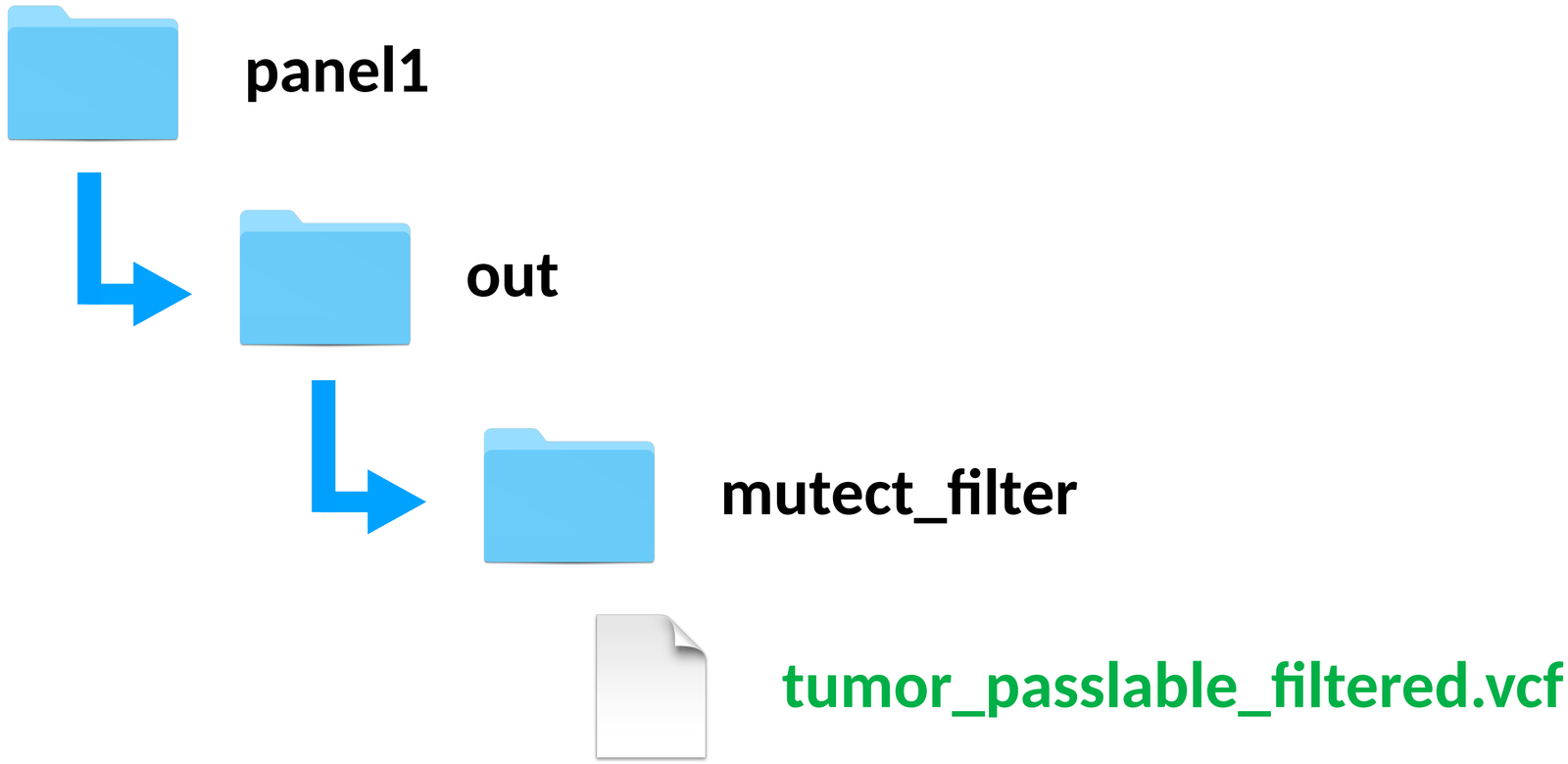
# Input 4: VCF

## Steps

PANDRUGS

1. **Query PanDrugs using the Genomic Variant section**
2. **Load the VCF without annotations from the exercise of the CHP patient**
3. **Query the database with this file**

# Input 4: VCF




**Data:** https://drive.google.com/file/d/1BknV7nyQDrUJ6LgAxh4ln8qVriUNI8-F/view?usp=sharing

# Input 4: VCF

PANDRUGS

- **Which are the suggested therapies?**
- **Is there any drug suggested by a gene that is discarded by another?**
- **Is there any drug approved for the same cancer type? Is there any drug in cancer clinical trials for this cancer type?**
- **Could a drug repositioning approach be used?**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# Thanks!


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