

# НИС ДЗ - Фармакогеномика

<https://github.com/PharmGKB/PharmCAT-tutorial>

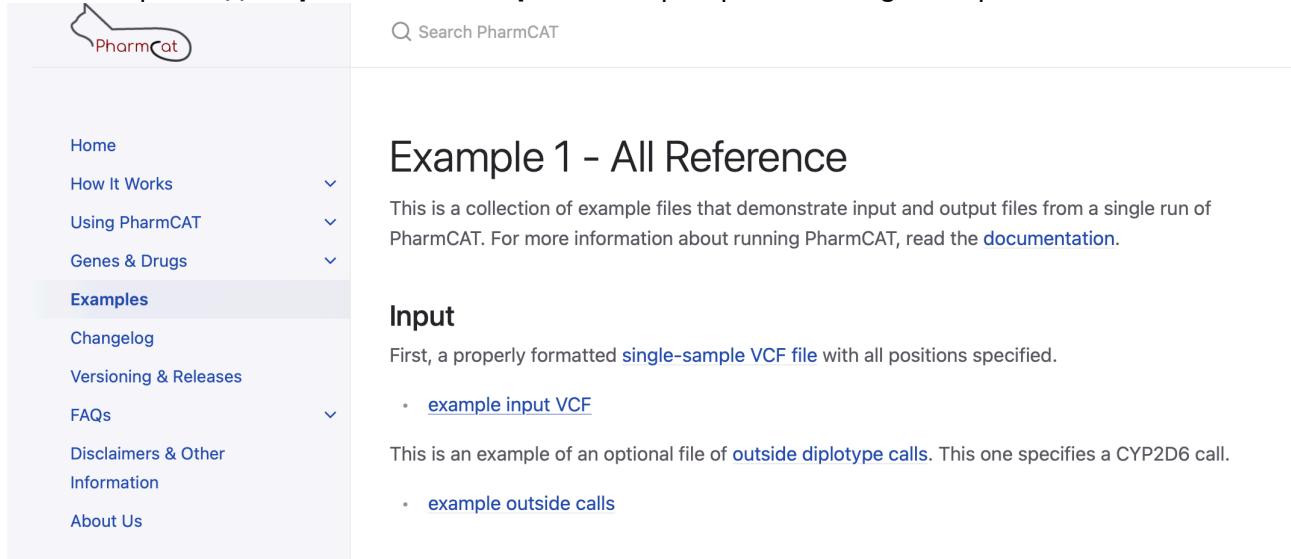
**1. Установите фармкат локально или на сервере сами (не используя докер).**

Подсказка: тул pharmcat имеет расширение .jar

Скачала файл **pharmcat-2.15.5-all.jar** отсюда: <https://github.com/PharmGKB/PharmCAT/releases/tag/v2.15.5>.

**2. Запустите pharmcat на данных pharmcat.example.vcf по туториалу приведенному сверху**

Скачала файл здесь **pharmcat.example.vcf**: <https://pharmcat.org/examples/>



The screenshot shows the official PharmCAT website. The sidebar on the left has a navigation menu with items like Home, How It Works, Using PharmCAT, Genes & Drugs, Examples (which is currently selected), Changelog, Versioning & Releases, FAQs, Disclaimers & Other Information, and About Us. The main content area has a search bar at the top. Below it, there's a section titled "Example 1 - All Reference" with a description: "This is a collection of example files that demonstrate input and output files from a single run of PharmCAT. For more information about running PharmCAT, read the [documentation](#)". Under "Input", it says: "First, a properly formatted [single-sample VCF file](#) with all positions specified." There's a bulleted list: "example input VCF". Under "Optional file", it says: "This is an example of an optional file of [outside diplotype calls](#). This one specifies a CYP2D6 call." There's another bulleted list: "example outside calls".

Образец кода:

```
java -jar <path_to_the_latest_pharmcat_jar> -vcf <sample_file>
```

Моя команда:

```
java -jar pharmcat-2.15.5-all.jar -vcf pharmcat.example.vcf
```

```
(base) jupyter-gorovenko-e@hse-students:~/common/K/pharmcat$ java -jar pharmcat-2.15.5-all.jar -vcf pharmcat.example.vcf
Saving named allele matcher JSON results to /srv/common/K/pharmcat/pharmcat.example.match.json
Saving phenotyper JSON results to /srv/common/K/pharmcat/pharmcat.example.phenotype.json
Saving reporter HTML results to /srv/common/K/pharmcat/pharmcat.example.report.html
Done.
```

**3. Получите отчет Reporter в формате .html**

Получила отчет в файле pharmcat.example.report.html.

Сказала себе этот файл с сервера.  
Открыла файл в браузере.

The screenshot shows a browser window with the title "PharmCAT Report pharmcat.example". The top right corner displays the creation date ("December 13, 2024"), software version ("PharmCAT Version 2.15.5"), and data version ("Data Version 2024-11-06-02-36"). Below the title, a section titled "Sections" lists four items: I. Genotype Summary, II. Prescribing Recommendations, III. Allele Matching Details, and IV. Disclaimers. A blue box contains a disclaimer: "Disclaimer: PharmCAT is only able to generate recommendations based on the information provided to the software. The gene and variant information for all reported sections are interpreted directly from user-supplied data. The user recognizes they are using PharmCAT at their own risk. For a full list of disclaimers and limitations see Section IV." Under "Section I: Genotype Summary", it says "Genotypes called: 18 / 19" and shows a table:

Drugs	Gene	Genotypes Genotype	Allele Functionality	Phenotype
allopurinol rosuvastatin	ABCG2 ‡	rs2231142 reference (G)/rs2231142 reference (G)	Two Normal function alleles	Normal Function

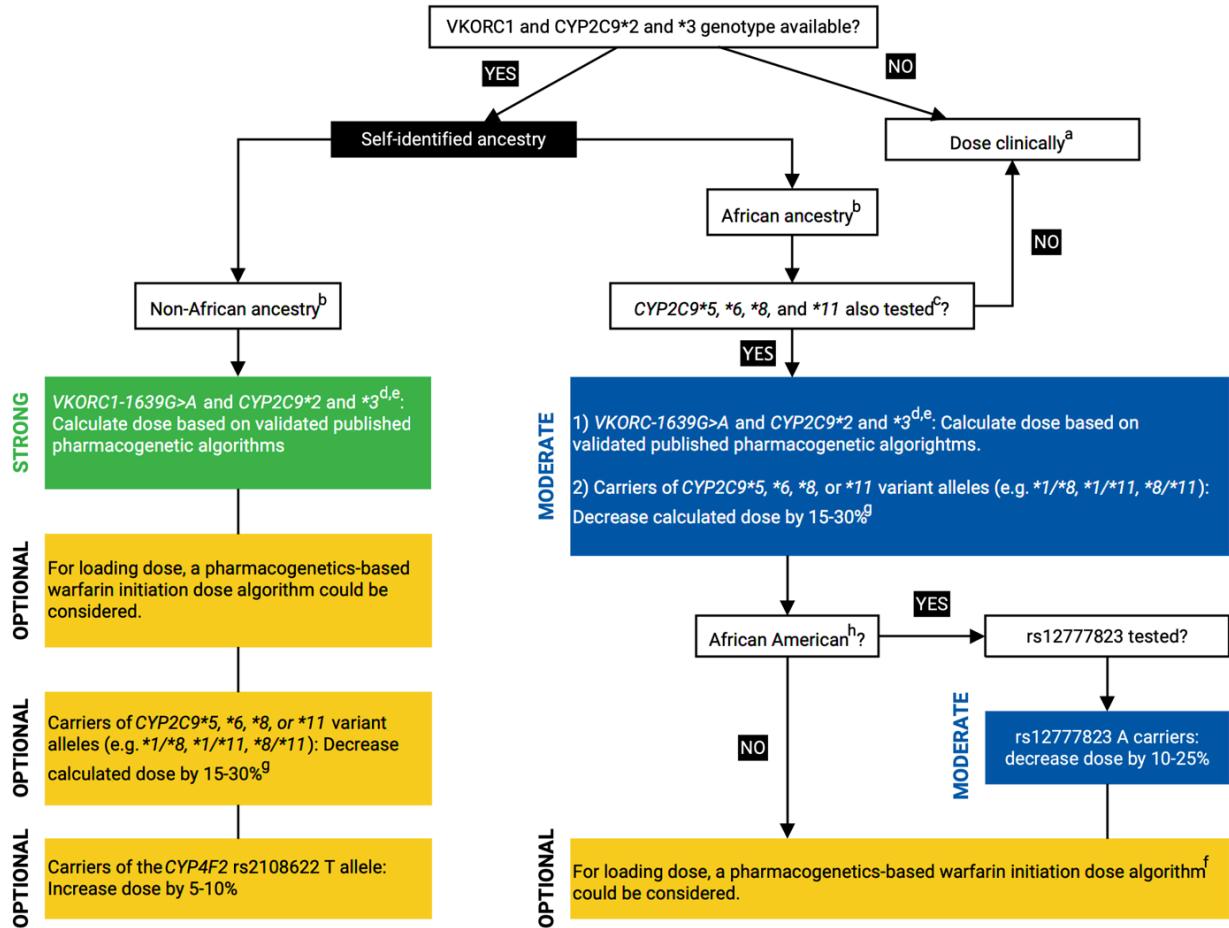
## Задания:

### 1. Напишите полученные генотипы для генов *VKORC1* и *CYP2C9*

*VKORC1*  
rs9923231 reference (C)/rs9923231 reference (C)

*CYP2C9*  
\*1/\*1

### 2. Напишите фенотип метаболизатора варфарина



Фенотип: Dose clinically (a)

### 3. Какая доза варфарина рекомендована гайдлайном СРІС для этого пациента?

- (a) "Dose clinically" means to dose without genetic information, which may include use of a clinical dosing algorithm or standard dose approach
- (b) Data strongest for European and East Asian ancestry populations and consistent in other populations.
- (c) 45-50% of individuals with self-reported African ancestry carry CYP2C9\*5,\*6,\*8,\*11, or rs12777823. IF CYP2C9\*5, \*6, \*8, and \*11 WERE NOT TESTED, DOSE WARFARIN CLINICALLY. Note: these data derive primarily from African Americans, who are largely from West Africa. It is unknown if the same associations are present for those from other parts of Africa.
- (d) Most algorithms are developed for the target INR 2-3.
- (e) Consider an alternative agent in individuals with genotypes associated with CYP2C9 poor metabolism (e.g., CYP2C9 \*2/\*3, \*3/\*3) or both increased sensitivity (VKORC1 A/G or A/A) and CYP2C9 poor metabolism.
- (f) See the EU-PACT trial for pharmacogenetics-based warfarin initiation (loading) dose algorithm (33) with the caveat that the loading dose PG algorithm has not been specifically tested or validated in populations of African ancestry.
- (g) Larger dose reduction might be needed in variant homozygotes (i.e. 20-40%).
- (h) African American refers to individuals mainly originating from West Africa.

Рекомендовано назначение дозировки препарата без генетической информации, то есть пациенту назначают стандартную дозу препарата.