

Oracle® Healthcare Precision Medicine

User's Guide

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Preface

This guide describes how to use Oracle Healthcare Precision Medicine (OHPM).

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Oracle Help Center

The latest user documentation for Oracle Health Sciences products is available at

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The latest release notes, patches and white papers are on My Oracle Support (MOS) at

<https://support.oracle.com>. For help with using MOS, see

https://docs.oracle.com/cd/E74665_01/MOSHP/toc.htm.

Related Documents

Oracle Business Intelligence Enterprise Edition Documentation

The OBIEE documentation is available at

<http://docs.oracle.com/middleware/12212/biee/index.html>.

Oracle Healthcare Foundation

The OHF documentation is available at

<https://docs.oracle.com/en/industries/health-sciences/oracle-healthcare-foundation/index.html>

Introduction

This chapter provides an introduction to Oracle Healthcare Precision Medicine (OHPM). It contains the following topics:

- [Section 1.1, "Overview"](#)
- [Section 1.2, "Disclaimer"](#)
- [Section 1.3, "What Can I Do Using Oracle Healthcare Precision Medicine"](#)
- [Section 1.4, "User Roles"](#)
- [Section 1.5, "Known Issues"](#)

1.1 Overview

Oracle Healthcare Precision Medicine is a software application designed to address the gap between treatments in the clinic and the knowledge in the research pipelines. It enables collaboration between the clinician, looking for the most appropriate treatment for his patient, and the molecular pathologist, learning patient's molecular profile and suggesting the most up-to-date treatment to follow.

The clinician orders diagnostic tests. After the specimen is collected and processed, the molecular pathologist analyzes test results and delivers treatment recommendations. OHPM helps optimize personalized patient care based on an individual's clinical and genomic profile. It also accelerates molecular laboratory testing throughput, while maintaining consistency and traceability of the generated reporting contents to fulfill compliance requirements.

1.2 Disclaimer

The Oracle Healthcare Precision Medicine software is only a search tool and is not intended to, and must not replace the clinician's judgment or experience. Furthermore, the healthcare professional using this search tool should employ their professional judgment concerning the reliability and accuracy of the information in the various knowledge databases that are employed or selected as content for reports generated using Oracle Healthcare Precision Medicine.

1.3 What Can I Do Using Oracle Healthcare Precision Medicine

The following lists the primary tasks that can be accomplished using OHPM:

- Filter through thousands of variants to identify ones which are clinically actionable or may be relevant

- Annotate variants that can be acted upon today or warrant further investigation based on sequenced data and reference information, both internal and external
- Publish a genomic report to be used in clinical practice (report can be published both to OHPM and EMR system) and therefore personalize treatment
- View the published report with full security settings, which are based on the user's access to patient records

1.4 User Roles

The following are the various user roles in OHPM:

- `pm_reporter_group` - for users who will be generating molecular reports and publishing them or browsing through genomic data. This includes molecular pathologists and clinical geneticists.
- `pm_clinician_group` - for doctors who are seeing patients and request the report to be done. This includes clinicians, physicians and nurses.
- `pm_reporter_limited_group` - for someone who can browse through data and perform most of the reporting steps but cannot publish the report nor request report from third parties (example, N-of-One). This includes molecular pathologists and clinical geneticists who may be training on the software.
- `pm_nofone_xml_expert_group` - an add-on role for an N-of-One expert. It is applicable only to a reporter user who also has access to N-of-One functionality and has been trained to work with the xml version of N-of-One reports. This user gets the additional functionality of being able to download the xml version of the N-of-One report.
- `pm_admin_group` - for users who can create groups of other users and manage roles of users.

Users may be given several of these roles but the roles take precedence in the order of precedence listed below:

- `pm_reporter_group`
- `pm_reporter_limited_group`
- `pm_clinician_group`

A user cannot have both clinician and either of the reporter roles. If this happens, the application displays an error.

The `pm_admin_group` role can be used in conjunction with any of the above roles. The `pm_nofone_xml_expert_group` role is only used in conjunction with `pm_reporter_group` role.

1.5 Known Issues

Following are the known issues for this release of OHPM:

- When clicking View Patient from the Genomic Report window, the Patient Viewer does not perform. It can take several minutes to load.
- In the variant table, sorting based on chromosome position treats numbers as strings. For example, chr7 appears after chr11 when you select sorted by ascending.
- Certain variants which are present on MT or Y chromosome appear as linked to bogus 'No Gene' record.

- While filtering, certain variants are missing non-coding impact attribute when listed in the tabular view. This attribute appears correctly once the user looks at the Variant Detail screen.
- No warning or prompt is displayed before the application times out.
- Variant Effect calculations are incorrect for variants near CDS boundaries.
- There is no indication to display the default sorting and then change it.
- Mitochondrial chromosome variants are not labeled correctly when sent to Dalliace resulting in no data shown.
- The Patient Viewer tab does not load the relevant patient automatically.
- Patient Viewer only supports searching by patient ID, not patient name.
- After viewing patient details from the patient viewer, if you open another report and click Patient Viewer, you will still see the patient details from the previous report.
- Variants with chromosome position :CHMT do not display the variant area in Dalliace.

Home Page

This chapter describes the features on the Home page. Depending on your role, you may have restricted access to these functions. This chapter contains the following topics:

- [Section 2.1, "Molecular Pathologist Home Page"](#)
- [Section 2.2, "Clinician Home Page"](#)

Note: If you are a clinician, your page will be different from what is described here. For details, see [Section 2.2, "Clinician Home Page"](#).

2.1 Molecular Pathologist Home Page

This section describes the home page for the Molecular Pathologist.

The screenshot displays the Oracle Healthcare Precision Medicine interface for a Molecular Pathologist. The top navigation bar includes the Oracle logo, the text "Healthcare Precision Medicine", and several tabs: "Genomic Report", "Patient Viewer", "Gene Sets", and a user profile dropdown for "tester". Below the navigation bar is a search bar with the placeholder text "Patient ID, Patient Name, Specimen ID, Report Name, Order ID". The main content area is divided into three vertical panels:

- New Orders (Orange Header):** Contains four orders for "CNRN_CD_4_VIN Name INFA". Each order includes an order ID, a lab name, and a submission date.

Order ID	Lab Name	Submitted Date
#ORDER2	vof (Lab: FAC_ORD_2)	Submitted: 02-16-2016
#ORDER3	vof (Lab: FAC_ORD_3)	Submitted: 02-16-2016
#ORDER5	vof (Lab: FAC_ORD_5)	Submitted: 02-16-2016
#ORDER9	-	Submitted: 02-16-2016
- My Draft Reports (Blue Header):** Contains five draft reports. Each report includes a title, a patient name, and an update date.

Report Title	Patient Name	Updated Date
Test1234	tester	Updated: 05-20-2016
Diverticulitis	tester	Updated: 05-19-2016
doctest1	tester	Updated: 05-18-2016
Multiple_files	tester	Updated: 05-18-2016
Untitled-30	tester	Updated: 05-18-2016
Julian-Bug-23295725	tester	Updated: 05-17-2016
Untitled-29	-	-
- Published Reports (Green Header):** Contains one published report.

Report Title	Patient Name	Published Date
CNRN_CD_4_VIN Name INFA_UPDATED	tester	Published: 05-08-2016

2.1.1 Tabs

The following sections describe the home page tabs.

2.1.1.1 Genomic Report

This contains the new orders, draft reports and published reports for a user and acts as a starting point for reporting workflow.

2.1.1.2 Patient Viewer

This tab lets you view detailed patient information, including both clinical (coming from Clinical Data Model) and genomic (coming from Omics Data Bank) details. For details, see [Chapter 6, "Patient Viewer"](#).

2.1.1.3 Gene Sets

The Gene Sets tab is a way to collect genes into groupings or lists for use in filtering queries (see [Section 3.4](#)). For details on how to create and manage gene sets, see [Chapter 7, "Gene Sets"](#).

2.1.2 New Orders

This section lists out the new orders for reports with the oldest report on top. New orders have a green icon next to them. Once a draft report is created, the order is not visible in the list.

However, if you delete the draft report, the order will again appear in this list. Click an order to view the Report Review page.

The following information is displayed for each order:

- Lab from where order came
- User who submitted order
- Diagnosis that came with order
- Date when order was submitted

2.1.3 My Draft Reports

This section lists a user's draft reports with the last updated report on top. These reports are private and cannot be viewed by another user. Click a draft report to go to the Report Review page.



The following information is displayed for each draft report:

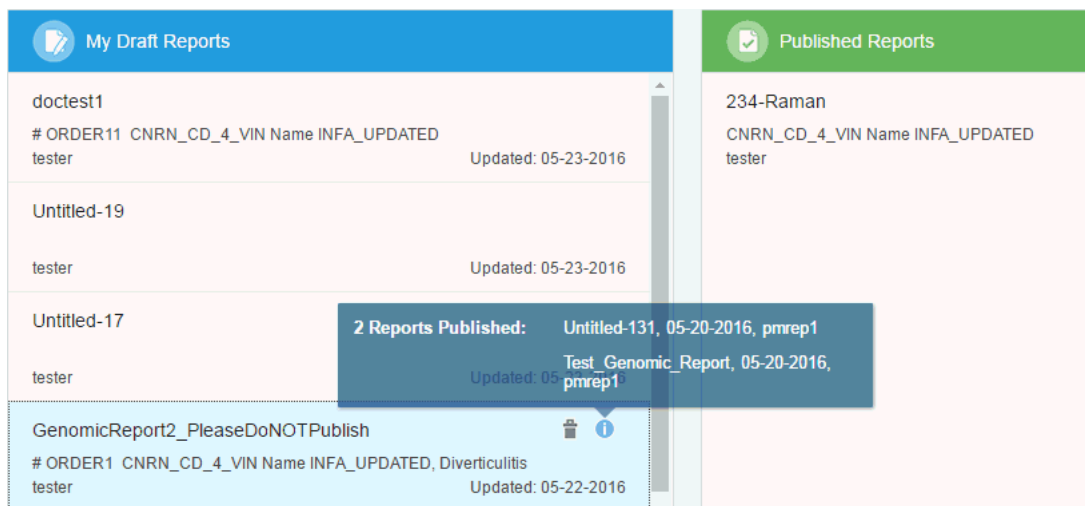
- Report name
- Date when report was last updated
- Delete icon (appears when you place the cursor over the report name)



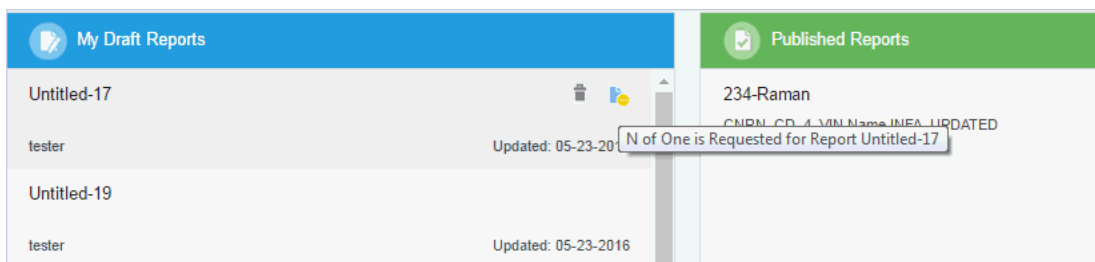
- Indicator that other draft and published reports are available for that order ((appears when you place the cursor over the report name)



Clicking this icon results in a popup with information on the other reports for that order



- Indicator that interpretation has been requested. Place your cursor over the following icon to view a popup indicating the interpretation status.

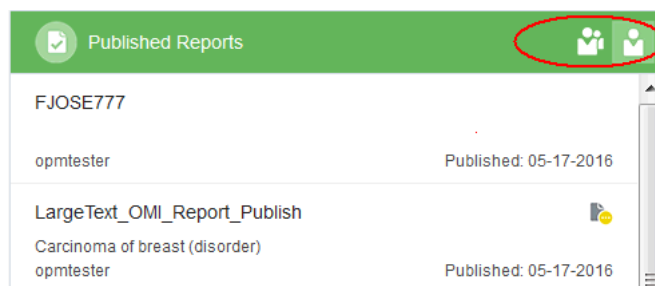


- Status of child reports

2.1.4 Published Reports

This section lists all published reports with the latest report on top. You can view all published reports or only the ones published by you using the icons on the top right.

Note: You can only view reports for patients that you have access to irrespective of whether reports have been created by you or not.



The following information is displayed for each order:

- Report name
- Report author
- Date the report was published
- Diagnosis

To view the report, click it. The PDF format of the report is displayed in a new tab.

Note: To view published reports, ensure that you have disabled the pop-up blocker in your browser.

2.1.5 Searching

You can search for orders or reports based on any one of the following:

- Patient ID
- Patient Name
- Specimen ID
- Report Name - You can search within draft or published reports for a particular patient that you have access to.
- Order ID

Depending on the category you are using for your search, autocomplete kicks in after 1 or more characters have been entered in the search field. For example, if you are searching for a name, it is 2 characters; if it is a report, it is 1 char. Autocomplete results span all the above categories. Results are displayed with the latest report on top.

Perform the following steps to search for reports and new orders:

1. In the search bar at the top, enter the Patient ID. Matching results for the entered value are displayed in a drop-down list.

The screenshot shows the Oracle Healthcare Precision Medicine interface. At the top, there's a navigation bar with 'Genomic Report', 'Patient Viewer', 'Gene Sets', and a user profile 'tester'. Below the navigation bar, there's a search bar with the text 'jan'. A dropdown menu is open, showing a list of patient names: 'Jane MATHUR (ID: 1)', 'Jane MATHUR (ID: 1001)', 'Jane MATHUR (ID: 1002)', 'Jane MATHUR (ID: 1004)', 'Jane MATHUR (ID: 1005)', 'Jane MATHUR (ID: 2)', 'Jane MATHUR (ID: 3)', 'Jane MATHUR (ID: 4)', and 'Jane MATHUR (ID: 5)'. To the left of the search bar, there's a 'New Orders' button and a message 'No Orders found'. To the right, there's a 'Published Reports' section showing a report for '234-Raman' with details like 'CNRN_CD_4_VIN Name INFA_UPDATED', 'Diverticulitis', 'tester', and 'Published: 05-06-2016'.

2. Select the value from the list.
3. The New Orders, Draft Reports and Published Reports for that patient are displayed.

Click the X icon in the search bar to navigate back to the Home page.

The screenshot shows the Oracle Healthcare Precision Medicine interface for a specific patient. At the top, there's a search bar with the text 'Jane MATHUR (ID: 1)'. Below the search bar, there's a patient summary section with 'Patient: Jane MATHUR (ID: 1)' and a link 'Create new report/View files'. Below this, there's a table with three columns: 'Draft Reports', 'Published Reports', and 'Tested Reports'. The 'Draft Reports' column shows three reports: 'test234432234432', 'GenomicReport2_PleaseDoNOTPublish', and 'GenomicReport_PleaseDoNOTPublish'. The 'Published Reports' column shows three reports: 'Untitled-131', 'Untitled-138', and 'Test_Genomic_Report'. The 'Tested Reports' column is empty. The table has a 'No Orders found' message on the left.

Depending on which parameter you search for, the results will be displayed as follows:

- Selecting a Draft Report directly opens it for editing.
- Selecting an independent N-of-One Published Report will open its PDF version in a new window.

Search All Mode

This is an alternative search mode. You can enter a search parameter and view results within all other parameters.

1. Enter a parameter in the search box at the top. The parameter can be the Patient ID, Patient Name, Specimen ID, Report Name or Order ID. For illustration, the patient ID has been used.
2. Click the search icon next to the search bar or press Enter.



3. The matches for different categories are displayed. Click each category to view the matches under it.

A screenshot of a search interface. At the top is a search bar containing the text '007' and a search icon. Below the search bar, the results are categorized into two main sections: 'PATIENT' and 'SPECIMEN'. Under 'PATIENT', there are two entries: 'Jake Ray (ID: 007)' and 'John ALINARE (ID: 007_2)'. Under 'SPECIMEN', there are three entries: 'DRAFT REPORT', 'PUBLISHED REPORT', and 'ORDER'. Each category and its sub-items are enclosed in a light gray border.

007
PATIENT
Jake Ray (ID: 007)
John ALINARE (ID: 007_2)
SPECIMEN
DRAFT REPORT
PUBLISHED REPORT
ORDER

4. Select the value from the list.
5. The New Orders, Draft Reports and Published Reports for that parameter are displayed.

2.2 Clinician Home Page

If OHPM has been integrated with EMR (see the *Oracle Healthcare Precision Medicine Administrator's Guide* for information on EMR integration), clinicians can access the genomic report from EMR once it is published. However, if there is no EMR integration, you may need to access the report from OHPM. The Clinician Home Page is as follows:

ORACLE[®] Healthcare Precision Medicine

Genetic Testing

Patient Viewer

opmclinician

Patient ID, Patient Name, Specimen ID, Report Name, Order ID

Orders

✓

ORD_723_1 (FAC12)

GENOMIC TEST
Paragangliomas 2 (sequence analysis of SDHAF2 gene)

Diagnosis: -
Ordered By: SER14

Updated 04-21-2016

✓

ORD_693_1 (FAC76)

GENOMIC TEST
Panel_19(TEST_CODE19)

Diagnosis: -
Ordered By: SER11

Updated 04-18-2016

✓

FN84_ORD_651_1 (FAC12)

GENOMIC TEST
Panel_84(TEST_CODE84)

Diagnosis: Complications of reattached (part of) unsp upper extremity(T870X9), Complications of reattached (p...
Ordered By: SER4

Updated 04-18-2016

✓

ORD_690_1 (FAC93)

GENOMIC TEST
Panel_71(TEST_CODE71)

Diagnosis: -
Ordered By: SER2

Updated 03-30-2016

⚠

ORD_675_1 (FAC53)

GENOMIC TEST
Panel_34(TEST_CODE34)

Diagnosis: -
Ordered By: SER3

Updated 01-22-2016

⚠

FN84_ORD_660_1 (FAC79)

2.2.1 Tabs

This section describes the tabs displayed on the Clinician home page.

2.2.1.1 Genetic Testing

This tab displays all the Orders and can be used for searching. For details on Orders, see [Section 2.2.2, "Orders"](#).

2.2.1.2 Patient Viewer

Patient Viewer - This tab lets you view detailed patient information. For details, see [Section 2.1.1.2](#).

2.2.2 Orders

Orders are listed with the latest order on top. The following information is displayed for each order:

Orders		
✓ # ORD_723_1 (FAC12)	GENOMIC TEST Paragangliomas 2 (sequence analysis of SDHAF2 gene)	Diagnosis: - Ordered By: SER14 Updated 04-21-2016

- Order ID (lab)
- Ordered by - username of the user who placed the order
- Updated - When the order was last updated
- Genomic Test - Tests that have been ordered
- Diagnosis - The diagnosis that came with order

- Icons indicating whether the order has a draft report, published report or no reports
 - The green checkmark icon indicates that an order has a published report.



- The yellow icon indicates that an order has a draft report



- The grey icon indicates that an order has no reports.



Click an order to view its details.

2.2.3 Searching

You can search for orders or reports based on any one of the following:

- Patient ID
- Patient Name - first name or last name or both in any order
- Specimen ID
- Published Report Name - You can search only through published report names for the patients you have access to. You will not be able to view external standalone reports.
- Order ID

Depending on the category you are using for your search, autocomplete kicks in after 1 or more characters have been entered in the search field. For example, if you are searching for a name, it is 2 characters; if searching for a report, it is 1 char.

Autocomplete results span all the above categories. Results are displayed with the latest report on top.

Perform the following steps to search for reports and new orders:

1. In the search bar at the top, enter the Patient ID. Matching results for the entered value are displayed in a drop-down list.
2. Select the value from the list.
3. The New Orders and Published Reports for that patient are displayed.

Click the X icon in the search bar to navigate back to the Home page.

FN84 LN84 (ID: P84)
✕ 🔍

Patient: FN84 LN84 (ID: P84) [View Patient](#)

Orders	Published Reports
<div style="display: flex; align-items: center; margin-bottom: 10px;"> ✔ # FN84_ORD_651_1 (FAC12) </div> <p>Complications of reattached (part of) unsp upper extremity(T870X9), Complications of reattached (...)</p> <p>Genomic Test: Panel_84</p> <p>Ordered By: SER4</p> <p>Updated on: 04-18-2016</p>	<div style="margin-bottom: 10px;"> <p>Reju-Test-99</p> <p>Diagnosis: Heart-lung transplant failure, Lung involvement in systemic</p> <p>Order: -</p> <p>Authored By: vpdtester</p> <p>Published Date: 05-24-2016</p> <p>Read</p> </div> <div> <p>Untitled-680</p> <p>Diagnosis: Complications of reattached (part of) lower extremity, Anoxi</p> <p>Order: -</p> <p>Authored By: opmtester</p> <p>Published Date: 05-23-2016</p> <p>Read</p> </div>
	<div> <p>LargeText_OMI_Report_Publish</p> <p>Diagnosis: Carcinoma of breast (disorder)</p> <p>Order: -</p> <p>Authored By: opmtester</p> </div>

Search All Mode

This is an alternative search mode. You can enter a search parameter and view results within all other parameters.

1. Enter a parameter in the search box at the top. The parameter can be the Patient ID, Patient Name, Specimen ID, Report Name or Order ID. For illustration, the patient ID has been used.
2. Click the search icon next to the search bar or press Enter.



3. The matches for different categories are displayed. Click each category to view the matches under it.

007
✕ 🔍

PATIENT

Jake Ray (ID: 007)

John ALINARE (ID: 007_2)

SPECIMEN

DRAFT REPORT

PUBLISHED REPORT

ORDER

4. Select the value from the list.
 5. The New Orders and Published Reports for that parameter are displayed.
- Click the X icon in the search bar to return to the Home page.

Filtering Variants and Starting Reports

This section describes the tasks you can perform with reports. It includes the following sections:

- [Section 3.1, "Patient Overview"](#)
- [Section 3.2, "Selecting Data Files"](#)
- [Section 3.3, "Associating Diagnoses with Reports"](#)
- [Section 3.4, "Filtering Variants"](#)

3.1 Patient Overview

You can view information about the specimen, order and data files corresponding to running genomic tests or molecular data for a given patient. Only molecular pathologists and researchers roles have access to this feature.

To display the overview, click the arrow next to the patient name on the top left corner.

The screenshot shows the 'Patient Overview' page for 'Jems Olive (ID: 9)'. A modal window is open, displaying the following information:

Order(Lab):	ORDER9
Clinical Diagnosis:	CNRN_CD_4_VIN Name INFA_UPDATED(CNRN_CD_VIN_INFA_4_UPDATED)
Ordering Physician:	-
Order Date:	02-16-2016
Specimen ID(Lab):	TCGA-06-0129-01A-01W(maf)
Collection Date:	04-11-2016
Specimen Type:	SPUTUM
Anatomical Site:	SPCMN_ANA_SITE_CD_VIN_NM_INFA_1
Histopathology Diagnosis:	HISTOPATHOLOGY_10
Estimated Tumor Percentage:	< 90%
Test:	Panel_14(TEST_CODE11) - 04-23-2016
Test Source:	ORCL
Test Method:	Next-Generation (NGS)/Massively parallel sequencing (MPS)
Result Files:	file://trc/336/hgsc.bcm.edu__Applied_Biosystems_Sequence_data_level3_NEW.maf

At the bottom right of the modal, there is a link: [View Patient](#).

The following information is displayed:

- Order (Lab) - Order ID and Lab that the order is coming from
- Clinical Diagnosis - The diagnosis linked to the order, can be more than one.
- Ordering Physician - The physician who placed the order
- Order Date - The date the order was placed
- Specimen ID (Lab) - Specimen number and vendor number
- Collection Date - When specimen was collected
- Specimen Type - The type of specimen, for example, blood tissue
- Anatomical Site - The site from where the specimen was taken, for example, liver.
- Histopathology Diagnosis - The diagnosis associated with specimen when returned from the pathology lab. This may or may not be same as the one associated with order, could be multiple.
- Estimated Tumor Percentage - The percentage of tumor estimated to be in tissue, for example, 10-30, >20, numeric values 0 to 100
- Test - The test(s) performed and dates each test was performed
- Test Source - Test source, from ODB reference part of the test
- Test Method - The method associated with the test in the ODB reference portion of the model
- Result Files - Sequencing files produced as a result of the test

The View Patient link on the bottom right navigates to the Patient Viewer page.

Selections

Patient :

Demographics

Patient ID:	9	Age:	4	Contact Info:	
First Name:	Jens	Date of Birth:	6/17/1979	Street Address:	009~HOME583 STRT_ADDR1 STRT_ADDR2
Last Name:	Olive	Deceased:	Y	City:	Phoenix
Gender:	female	Deceased Date:	3/22/1984	Zipcode:	99509
Marital Status:	Divorced	Ethnicity:		County:	Stopped
		Race:	Black	State:	Left Against Medical Advice
				Country:	Neulasta

Clinical Data

- ☒ Diagnosis
- ☒ Procedure
- ☒ Medication
- ☒ Test or Observation
- ☒ Specimen Samples Collected
- ☐ Clinical Encounter
- ☐ Patient History
- ☐ Consent

Genomic Data

- ☒ Genomic Reports
- ☒ Specimen with Genomic Results
- ☐ Derived Files
- ☐ File Lineage

Diagnosis

Diagnosis Name	Code	Age at First Onset (In Years)	Onset Date	Date Reported	End Date	Status	Anatomical Site Name	Anatomical Code
No data to display.								

Procedure

Procedure Name	Procedure Code	Procedure Type	Type Code	Start Date	End Date	Outcome	Anatomical Site Code	Anatomical Site Name	Data Source
PROC_CD_CODE_NM_4	PROC_CD_COD...	Procedure Code	PROC_CD						EHA(EHA)
PROC_CD_CODE_NM_4	PROC_CD_COD...	Procedure Code	PROC_CD	1/6/2011	1/14/2010				EHA(EHA)

3.2 Selecting Data Files

Perform the following steps to add data files to your report:

1. Depending on which page you have navigated from, click **Create new report/View files** as shown in [Figure 3-1](#) or **Add files** as shown in [Figure 3-2](#).

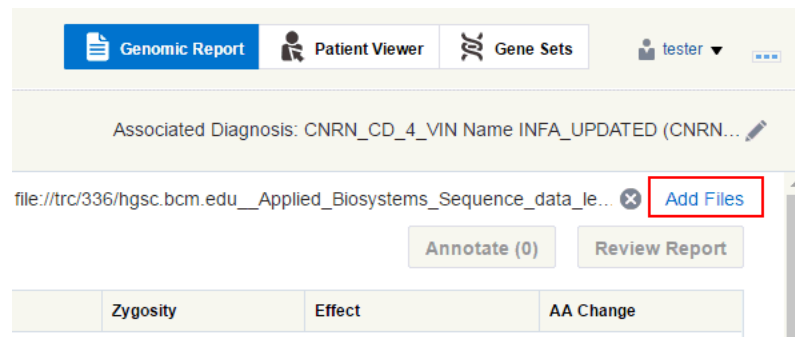
Figure 3–1 Adding Files to a New Report

Genomic Report

Jane MATHUR (ID: 1)

Patient: Jane MATHUR ID: 1

Create new report/View files

Figure 3–2 Adding Files to an Existing Order

The following details are displayed for each file:

- File ID - The file ID from Omics Data Bank
 - Date Loaded - Date on which the sequencing file was loaded
 - Order (Lab) - The order number associated with clinician's order
 - Order Date - The date when the clinician ordered the report
 - Test Name - The tests that have been ordered
 - Specimen (Lab) - Sample Identifier and the Lab the specimen was collected from
 - Anatomical Site - Anatomical site that the specimen came from, for example, Lung or Blood
 - DNA Assembly - The Assembly corresponding to results in the sequencing file
2. Select the files you want to add.

Note: All files you select must have:

- Their results aligned to the same Assembly or Alignment version. Once you select a file, all files that are not associated with the selected specimen or not aligned to same Assembly are greyed out and cannot be selected.

- Results corresponding to same (specimen, vendor) combination

However, the associated DNA annotation version can be different.

Add Files							
File ID	Date Loaded	Order (Lab)	Order Date	Test Name	Specimen (Lab)	Anatomical	
<input type="checkbox"/> file://trc/719/MIVARIANTS.vcf	05-15-2016				HG00096(vcf)	SPCMN_AN	▲
<input type="checkbox"/> file://trc/715/MIVARIANTS.vcf	05-15-2016				HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/711/MIVARIANTS.vcf	05-15-2016				HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/707/MIVARIANTS.vcf	05-15-2016				HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/621/summary_SNP-INDEL-LargeSV_29-oct-2013.vcf	05-12-2016				HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/617/summary_SNP-INDEL-LargeSV_29-oct-2013.vcf	05-12-2016				HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/612/summary_YRI.trio.2010_03.snps.genotypes_v13.vcf	05-12-2016				HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/608/summary_YRI.trio.2010_03.snps.genotypes_v13.vcf	05-12-2016				HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/538/summary_SNP-INDEL-LargeSV_16-Jan-2015.vcf	05-03-2016				HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/534/summary_SNP-INDEL-LargeSV_16-Jan-2015.vcf	05-03-2016				HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/530/summary_SNP-INDEL-LargeSV_16-Jan-2015.vcf	05-03-2016	ORDER1(FAC_ORD_1_UPDATED)	01-20-2016	Panel_13	HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/526/summary_SNP-INDEL-LargeSV_16-Jan-2015.vcf	05-03-2016	ORDER6(FAC_ORD_6)	02-16-2016	Panel_12	HG00096(vcf)	SPCMN_AN	
<input type="checkbox"/> file://trc/417/hgsc.bcm.edu__Applied_Biosystems_Sequence_data_level3_NEW.maf	04-09-2016				TCGA-02-0034-01A-01W(maf)	SPCMN_AN	
<input type="checkbox"/> file://trc/417/hgsc.bcm.edu__Applied_Biosystems_Sequence_data_level3_NEW.maf	04-09-2016				TCGA-02-0052-01A-01W(maf)	Female	▼
							▶
							Cancel Select

To deselect a file, click the cross icon located next to it or you can deselect it in the previous step.

Note: If a file being deselected has Annotated variants associated with it, a warning is displayed.

If the report only has one file remaining and you try to delete it, you will be prompted to remove any annotated variant associated with the report. Only after removing the annotated variant can the file be deselected.

Genomic Report

Patient Viewer

Gene Sets

tester ▼

Associated Diagnosis: CNRN_CD_4_VIN Name INFA_UPDATED (CNRN...)

file://trc/336/hgsc.bcm.edu__Applied_Biosystems_Sequence_data_level3_NEW.maf

✕

Add Files

Annotate (0)

Review Report

Zygosity	Effect	AA Change

3. Click Select.

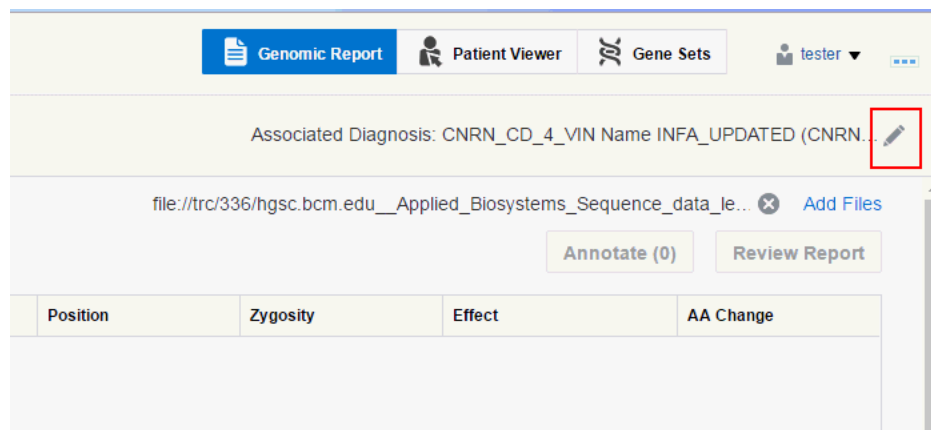
3.3 Associating Diagnoses with Reports

All the diagnoses associated with a report are visible in the top right hand corner. When a report is created, the diagnosis from the Order is automatically associated

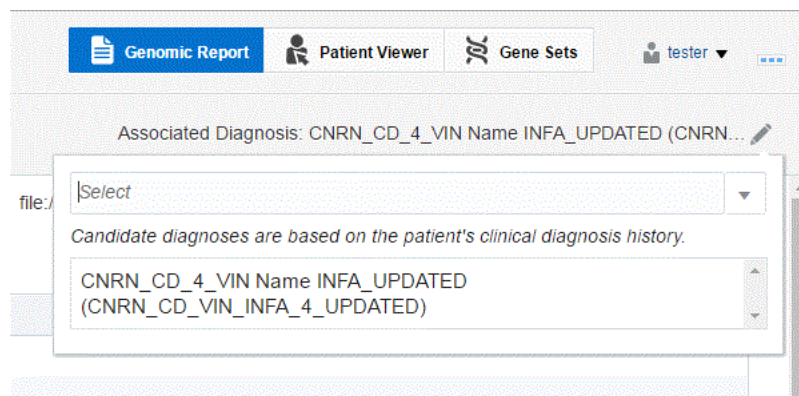
with the report. If the report is not based on an Order, you can select the diagnosis and save the report. On opening the draft report again, you can view the saved diagnosis. You can also leave the diagnosis in a report blank.

To add or edit diagnoses, perform the following steps:

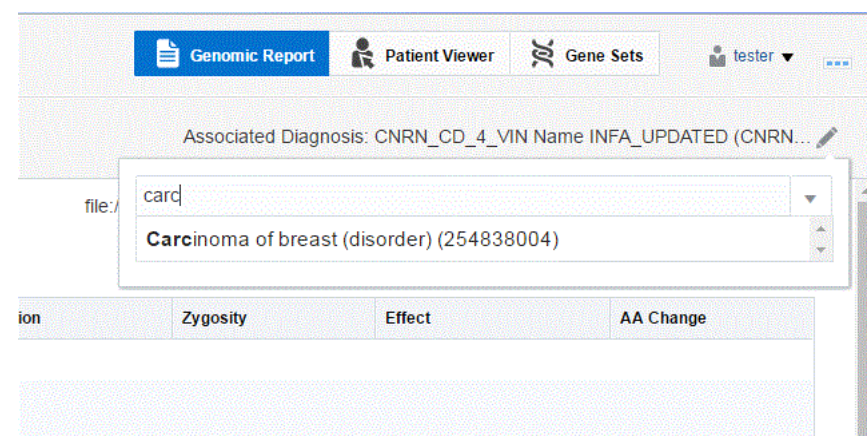
1. Click the pencil icon on the top right next to the diagnosis name.



A drop-down list of diagnoses is displayed. Diagnoses for a candidate is based on the patient's clinical diagnosis history. The candidate diagnoses, coming from patient history or order is restricted to 5 days after the Order is placed. An admin user can change this period of time to be different number.



2. You can search for a new diagnosis using the search box. Entries matching your input will be displayed.



3. Select the diagnosis you want to add. You can select more than one diagnosis.
4. Click anywhere outside the panel to close it.

3.4 Filtering Variants

This section describes all the tasks associated with filtering variants. To navigate to the filter pane, perform the following steps:

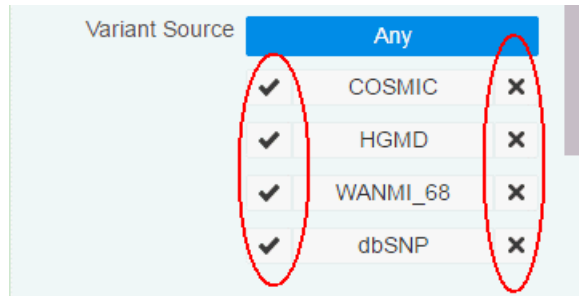
1. Click a draft report to open it.
2. Click **Back to Reporting** on the bottom left. The Report View appears with the filter pane located on the left.

3.4.1 Filtering Criteria

The filter pan consists of two sections:

- Variant Metadata
 - Gene Panel - Name of the Genomic Test that was run to get the results for the patient, typically Panel Test. You can select multiple values.
The gene panel values are preselected based on the files selected from the Add files ([Section 3.2](#)), when creating a new report.
 - Variant Status - Specifies which variant types to consider, whether the variant should be known or novel. Default considers all variants. You can select multiple values.
 - Variant Type - The type of variant. You can select multiple values.

- Variant Impact - Each variant type's impact on the resulting protein. You can select multiple values.
- Variant Source - You can filter variants based on a custom knowledge base. For details, see [Section 3.4.3](#). To include variants from a given source, click the check mark. To exclude variants from a given source, click the x mark.



- Variant Location
 - Gene - List of one or more genes. You can select multiple values. After you enter the first three character of the gene, the autocomplete feature is enabled and displays matching values.
 - Gene Set - User-defined collection of genes that you can reference anytime instead of having to build ad-hoc lists of genes each time. You can select multiple values. After you type the first character, the autocomplete feature displays matching values.
 - Pathway - Reference to a pathway stored on the reference side of the ODB model. This in turn corresponds to a list of genes that are to be used to compare their Intensity values. You can select multiple values. After you type the first character, the autocomplete feature displays matching values.
 - Genomic Position - Specify genomic location for the variants to occur in. You can enter values in the format *chr#:from-to* or *chr#:from* where $0 < \text{from} \leq \text{to}$
 - Region - Types of regions supported including Exome, 3' and 5' UTR, promoter region. If you select Gene, Gene Set, Pathway, or Genomic Position, the Region filter is enabled and prepopulated with *Exome*. You can remove it before applying the filter criteria.
 - Variant Identifier - Variant identifier which is a representation of the known variant through RS ID, Cosmic ID, or coding region variants through HGVS identifier. You can search for HGVS variant identifiers by entering the gene name and the autocomplete feature displays the matching IDs. You can select multiple values.

You can use the various options to view a set of variants for a report. The Apply button is enabled only after you select at least one criteria. Click **Apply** to view the filtered variants. The **Apply** button is enabled only if the filters applied are different from the previous search. The selected criteria will be displayed the next time you open the Filter pane.

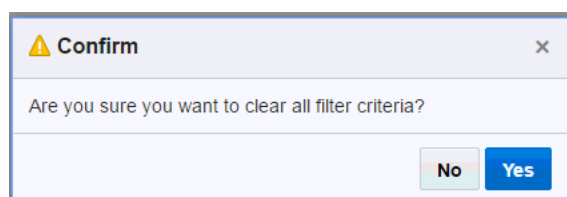
Performance will degrade if you select a large set of genes—either by selecting multiple pathways, large gene-sets or many ad-hoc gene selections. The more genes selected the more likely it is that the query performance degrades, especially with large result datasets.

Note: Filter criteria are not be saved with a Report. They will be reset when you log in again.

3.4.1.1 Clearing Filter Criteria

You can clear the filtered criteria by clicking **Clear**. You will receive a confirmation asking you if you want to clear the criteria. Click **Yes**. Click **Apply** to apply your changes.

Figure 3–3 Confirmation to Clear Criteria



3.4.2 Tabular View of Variants

In the tabular view, you can select variants and then annotate them. Only 500 variants are displayed in the table. By default, filtered variants are sorted by Genomic Position. You can sort the columns either in ascending or descending order by clicking the sorting icons of the following columns:

- HGVS Variant Id - Variant ID based on HGVS simple notation
- Gene - The gene name
- Position - The position on chromosome along with strand direction
- Zygosity - Variant zygosity

file:///trc/530/summary_SNP-INDEL-LargeSV_16-Jan-2015... x file:///trc/617/summary_SNP-INDEL-LargeSV_29-oct-2013... x Ac

92/92 Variants Found **0** Variants Annotated Annotate (0) Review R

<input type="checkbox"/>	HGVS Variant Id	Alternative Variant Ids	Gene	Position	Zygosity	Effect	AA Cha
<input type="checkbox"/>			NO GENE	CHRM:87	hom	non-coding	
<input type="checkbox"/>			MT-RNR1	CHRM:514-515	hom	non-coding	
<input type="checkbox"/>			MT-TF	CHRM:514-515	hom	non-coding	
<input type="checkbox"/>			NO GENE	CHRM:30	het-ref	non-coding	
<input type="checkbox"/>			MT-RNR2	CHRM:1980	half	non-coding	
<input type="checkbox"/>			MT-RNR1	CHRM:1001	het-ref	non-coding	
<input type="checkbox"/>		COSM6240	ELDR	CHR7:55249071	hom	non-coding	
<input type="checkbox"/>		COSM6240	EGFR	CHR7:55249071	hom	non-coding	
<input type="checkbox"/>	IMPDH1:c.403-984delA		IMPDH1	CHR7:128402100	het-alt	non-coding	
<input type="checkbox"/>	IMPDH1:c.403-984_403-983delAA		IMPDH1	CHR7:128402099-128402100	het-alt	non-coding	

The **Variants Found** section denotes how many variants are displayed and how many are totally found. For example, 500/1000 Variants Found implies that 1000 variants were found but only 500 have been displayed in the table.

The Variants Annotated section denotes how many of the displayed variants have been annotated. Annotated variants have the following icon in the first column:

file:///trc/417/hgsc.bcm.edu__Applied_B

1/1 Variants Found **1** Variants Annotated

<input type="checkbox"/>	HGVS Variant Id	Alternative Variant Ids	Gene	Position	Zygosity
<input checked="" type="checkbox"/>			CYP1B1-AS1	CHR2:38155074	hom

Note: A very small subset of variants may appear in multiple UI screens and reports to be associated with the placeholder record in the gene table with the name *NO GENE*.

A NO GENE gene is not a regular coding gene and can be safely ignored when displayed, with any mapped variant assumed to be *intergenic* unless mapped to another valid gene region.

3.4.3 Filtering Variants Based on Custom Knowledge Bases

You can filter variants based on custom knowledge bases in OHPM. You can include criteria from custom variant sources while filtering variants.

Jane MATHUR (ID: 1) Untitled-117 Associated Diagnosis

Filter

Variant Metadata

Gene Panel Select Gene Panels

Variant Status Select Variant Status

Variant Type Select Variant Type

Variant Impact Select Variant Impact

Variant Source Any

☒ COSMIC ☐

☒ HGMD ☐

☒ WANMI_68 ☐

☒ dbSNP ☐

Variant Location

Clear Apply

2/102 Variants Found

0 Variants Annotated

Annotate (0) Review Report

<input type="checkbox"/>	HGVS Variant Id	Alternative Variant Ids	Gene	Position	Zygosity	Effect	AA Change
<input type="checkbox"/>		rs139925418, WANM1428810		CHR1:148805730	het-ref	non-coding	
<input type="checkbox"/>		WANM1492467, rs4126054		CHR1:148794984	het-ref	non-coding	

Filtering Variants and Starting Reports 3-11

Reporting Workflow

This chapter describes how to perform various tasks to create reports. It includes the following topics:

- [Section 4.1, "Naming a Report"](#)
- [Section 4.2, "Viewing a Report"](#)
- [Section 4.3, "Editing a Report"](#)
- [Section 4.4, "Customizing a Report"](#)
- [Section 4.5, "Deleting a Report"](#)
- [Section 4.6, "Previewing a Report"](#)
- [Section 4.7, "Requesting Interpretation"](#)
- [Section 4.8, "Publishing a Report"](#)

4.1 Naming a Report

This task can be performed only by molecular pathologists.

Before saving your report, it appears with the default name *Untitled*. It is auto-saved with an auto-generated name. Your report is a draft and is private to you until it is published.

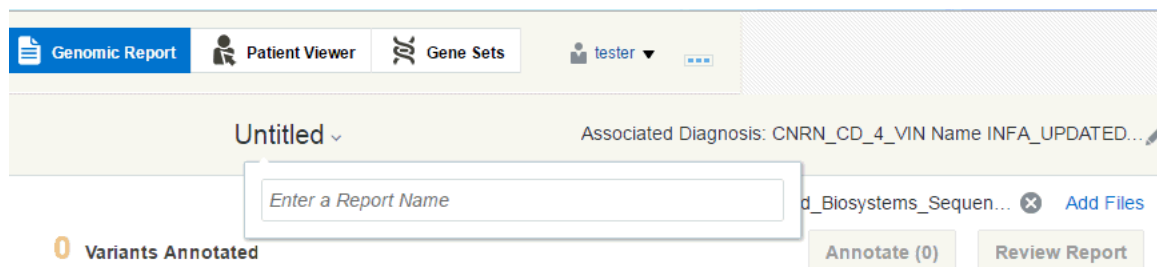
The report name should be unique. It should not consist of alphanumeric characters and . - _ + : \$ symbols.

Perform the following steps to name a draft genomic report:

1. When you first open a draft report, the name appears as shown:

The screenshot shows the Oracle Healthcare Precision Medicine web interface. At the top, there's a navigation bar with the Oracle logo and 'Healthcare Precision Medicine' text. To the right are buttons for 'Genomic Report', 'Patient Viewer', and 'Gene Sets', along with a user profile icon labeled 'tester'. Below this is a header area with a home icon, 'Jane MATHUR (ID: 1)' with a dropdown arrow, and a report name 'Untitled-16' which is circled in red. Below the header is a filter bar showing 'Filter' on the left and file paths on the right. At the bottom, there's a summary bar with 'Variant Metadata' on the left, '91/91 Variants Found' in orange in the center, and '0 Variants Annotated' on the right.

2. Click the downward arrow next to the default user name.



3. Enter the report name. Click anywhere outside the box or presenter key to save the report.
4. The system validates the report name and saves it. It appears in the draft report section on the Home page.

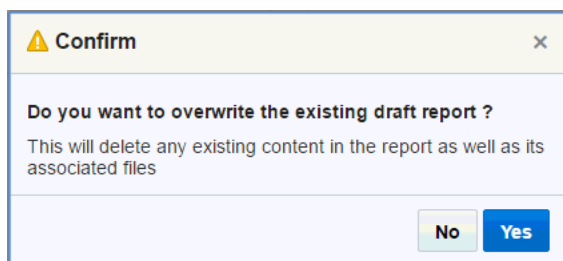
4.1.1 Overwriting a Draft Report

You can overwrite a draft report by:

Note:

- A draft report cannot be overwritten if the Target Report has an external N-of-One report associated with it.
- Published reports cannot be renamed.

1. Create a new report for an order.
2. Enter a name of an existing report that you have created. Click anywhere outside the box or presenter key.
3. The following confirmation box appears:



4. Click **Yes** to overwrite the existing report. This will delete all content from the existing report and its associated files.

4.2 Viewing a Report

To view a report, click it in the Draft report section on the home page. On opening a draft report, the gene panels are not preselected.

ORACLE[®] Healthcare Precision Medicine

Genomic Report Patient Viewer Gene Sets tester

FN91 LN91 (ID: P91) Untitled-5 Associated Diagnosis: -

Summary Recommendations

Interactions Guidelines

References

The following options are available:

- **Summary** - Lets you enter a report summary.
- **Recommendations** - Lets you enter recommendations, if any.
- **Interactions** - Lets you provide a summary of the combined effect of multiple variants that may have an impact on the course of treatment and prescribed medications.
- **References** - Lets you enter relevant references to external literature or guidelines supporting findings and recommendations in the report.
- **Guidelines** - Lets you enter a summary of practice guidelines (for example, NCCN) for a particular disease
- **Back to Reporting** - Navigates to the Reporting pane where you can work with the report.
- **Request Interpretation** - Lets you request external interpretation for selected variants in the report. Currently, the only external interpretation integrated in OHPM is N-of-One.
- **Customize** - Lets you select the information that will appear when you publish the report.
- **Preview** - Lets you preview the report before publishing it.
- **Publish** - Publishes the report. Depending on whether you have set up the EHR integration, the report may also be sent to EMR and published there. While you will not see any difference, the actual report is sent to EMR and the physician can log in there to view the report.

4.3 Editing a Report

To edit a report, perform the following steps:

1. Click a draft report to open it in the Report Review pane.

If you are in the Variant Filtering pane, click **Review Report** on the top right corner of the Variants list, to navigate the Report Review pane.

2. Click the pencil icon shown below to edit each section for a variant.



4.4 Customizing a Report

To customize published reports and published standalone N-of-One reports, click **Customize** on the bottom right of the draft report. The Customize Report screen appears.

Customize Report

The selected sections will be visible in the final report along with Detailed Variant Analysis.

<p><input checked="" type="checkbox"/> Report Information</p> <p><input checked="" type="checkbox"/> Report Date 02-05-2017</p> <p><input type="checkbox"/> Report Author tester</p> <p><input checked="" type="checkbox"/> Patient Demographics</p> <p><small>This section settings customize N-of-One report, if you publish it standalone.</small></p> <p><input checked="" type="checkbox"/> Patient Name FN92 MN92 LN92</p> <p><input checked="" type="checkbox"/> Patient ID P92</p> <p><input checked="" type="checkbox"/> Gender Female</p> <p><input checked="" type="checkbox"/> Age 64</p> <p><input checked="" type="checkbox"/> Date of Birth 09-08-1952</p> <p><input type="checkbox"/> Race Italian</p> <p><input type="checkbox"/> Ethnicity E20</p> <p><input type="checkbox"/> Deceased No</p> <p><input checked="" type="checkbox"/> Order Information</p> <p><small>This section settings customize N-of-One report, if you publish it standalone.</small></p> <p><input checked="" type="checkbox"/> Ordering Physician -</p> <p><input checked="" type="checkbox"/> Ordering Lab -</p> <p><input checked="" type="checkbox"/> Order ID (Lab ID) -</p>	<p><input checked="" type="checkbox"/> Appendix</p> <p><input checked="" type="checkbox"/> Data Files file:///trc/73/summary_hgsc.bcm.edu__Applied_Biosyst... file:///trc/178/P91_92_93_94_95_96_T48genes_VCF_... GRCh37</p> <p><input checked="" type="checkbox"/> Assembly Version V67</p> <p><input checked="" type="checkbox"/> Annotation Version</p> <p><input checked="" type="checkbox"/> Genome Viewer Dalliance: interactive genome viewing on the web Ver... http://www.biodalliance.org/ Google group: https://groups.google.com/forum/#iforu...</p> <p><input checked="" type="checkbox"/> External Information</p> <p><input checked="" type="checkbox"/> External Information NCBI ClinVar: public archive of interpretations of clinically rel... http://www.ncbi.nlm.nih.gov/clinvar/ clinvar@ncbi.nlm.nih.gov +1 (301) 496-6308</p> <p><input checked="" type="checkbox"/> Curated Annotations N-of-One Inc. http://www.n-of-one.com support@n-of-one.com 617-202-9808</p>
--	---

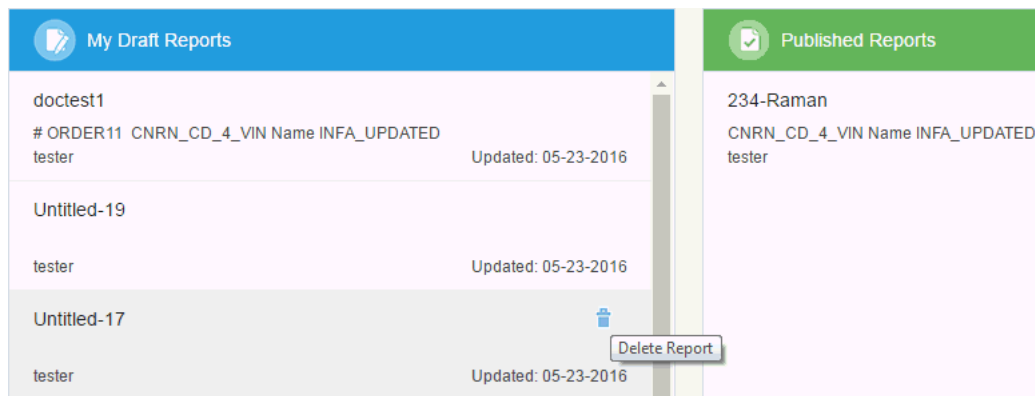
review the final report with applied customizations, click the Preview button or refresh the Preview window.

Cancel Apply

Select the information that you want to add into the report and click **Apply**.

4.5 Deleting a Report

To delete a report, click the trashcan icon in the draft reports section.





Note: You cannot delete a draft report that has an N-of-One report associated with it.

4.6 Previewing a Report

You can preview a report before publishing it by clicking **Preview** on the bottom right of a draft report. A PDF version of the report opens in a new window.

You can customize the report header and footer logo and text. For details, see the *Oracle® Healthcare Precision Medicine Administrator's Guide*.

Lab Name Non-Profit Hospital #P91 - FN91 MN91 LN91 12-22-2016			
Test-12-9-1			
PATIENT INFORMATION		ORDER INFORMATION	
Patient Name	FN91 MN91 LN91	Ordering Physician	-
Patient ID	P91	Ordering Lab	-
Gender	Male	Order ID	-
Age	9	Order Date	-
Date of Birth	11-22-2007	Specimen ID	TCGA-02-0010-01A-01W(vendor2)
		Specimen Type	SP7
		Anatomical Site	AS9
		Collection Date	12-02-2022
		Test	Panel_50
ASSOCIATED DIAGNOSIS			
Clinical Diagnosis	-		
Pathology Diagnosis	-		
SUMMARY			
-			
RECOMMENDATIONS			
-			
CLINICALLY ACTIONABLE FINDINGS			
Variant Id	Genes	AA Change	Therapy or Clinical Trial
BRCA2:c.7397T>C	BRCA2(ENSG00000139618),	p.(V2466A)	Clinically Actionable
	BRCA2(ENSG00000139618)		Therapy or Clinical Trial
VARIANT ANALYSIS			
► BRCA2:c.7397T>C	Alternative Variant Ids : rs169547		
	Genes : BRCA2(ENSG00000139618), BRCA2(ENSG00000139618)		
		Health Care Provider Lab Name #P91 - FN91 MN91 LN91 12-22-2016	
		1 / 3	

4.7 Requesting Interpretation

You can request third party interpretation (for example, N-of-One) for your report. Perform the following steps to request interpretation.

1. Open a draft report.
2. Click **Request Interpretation**.

Summary

Recommendations

Clinically Actionable Findings

Variant ID	Genes	AA change	Therapy or Clinical Trial
BRCA2:c.9502-449A>G	BRCA2(ENSG00000139618), BRCA2(ENSG00000139618)		

Annotations (3)

BRCA2:c.9502-449A>G

Variant Alternative IDs	Gene	AA Change	Change Effect
rs517118	BRCA2(ENSG00000139618), BRCA2(ENSG00000139618)		

Back to Reporting **N-of-One, Inc.** **Request Interpretation** **Customize** **Preview** **Publish Report**

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3. Select **N-of-One, Inc.** The Request Interpretation screen appears.

Request Interpretation

Select variants to send to N-of-One for interpretation

	HGVS Variant Id	HGVS Complete Id	Alternative Variant Ids	Gene	Position	Basepair Change	Strand	Zygosity	Effect	Genotype
<input checked="" type="checkbox"/>					CHR22:18239192-18239198	TTCTTTC>-	+	hom	non-coding	

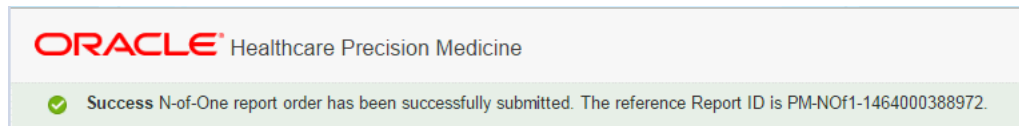
*** Diagnosis**

Select a Diagnosis

Preselected diagnosis, if any, is based on matching diagnosis attached to the report with available diagnoses. If you do not find diagnosis you are looking for, please email support@n-of-one.com with the diagnosis/disease name or SNOMED code describing it. N-of-One will respond within one business day with a suggested SNOMED code and name to use, which you then should be able to select from the Diagnosis drop down for your request.

Cancel **Send**

4. Select variants to send to N-of-One interpretation.
5. Select a **Diagnosis**. If the diagnosis in the parent report matches ones from N-of-One, it gets automatically selected.
6. Click **Send**. You will receive a confirmation that your report has been submitted along with a reference number.



Also an entry is made in the Review Report view as follows:

External Reports (1)

N-of-One Request sent on 05-22-2016 [Cancel Request](#)

Variants Sent for Interpretation (1)

HGVS Variant Id	HGVS Complete Id	Alternative Variant Ids	Gene	Position	Basepair Change	Strand	Zygosity	Effect	Genotype Quality	AA Change
				CHRX:80080	G>C	+	hap	non-coding		

Diagnosis
Lobular carcinoma of breast (disorder) (278054005)

You can cancel this interpretation request by clicking **Cancel Request** on the top right of the above entry. You will receive a confirmation message. Click **Yes**.

Also, the following icon appears in the draft reports section after requesting an external report. Clicking it displays the external report details.

My Draft Reports

Untitled-21

tester

doctest1

ORDER11 CNRN_CD_4_VIN Name INFA_UF

tester

Updated: 05-23-2016

N-of-One report pending

PM-NOF1-1464027609610

[Cancel Request](#)

Published Reports

234-Raman

UPDATED

4.8 Publishing a Report

You can publish your report by clicking **Publish** on the bottom right of the report. The published report then appears in the Published Reports section of the Home page. The report moves out of the Draft Report section once it is published.

Once published, your report will be visible to everyone with full access to the corresponding patient.

N-of-One Option Enabled

If you have enabled N-of-One integration with your workflow and elected to get a report from N-of-One, there are several ways to publish the final findings. You can publish your own report and the N-of-One report separately. Alternatively, you can merge the two reports and publish as one document.

Note: If the N-of-One option is not enabled, you can publish your own report according to the standard workflow.

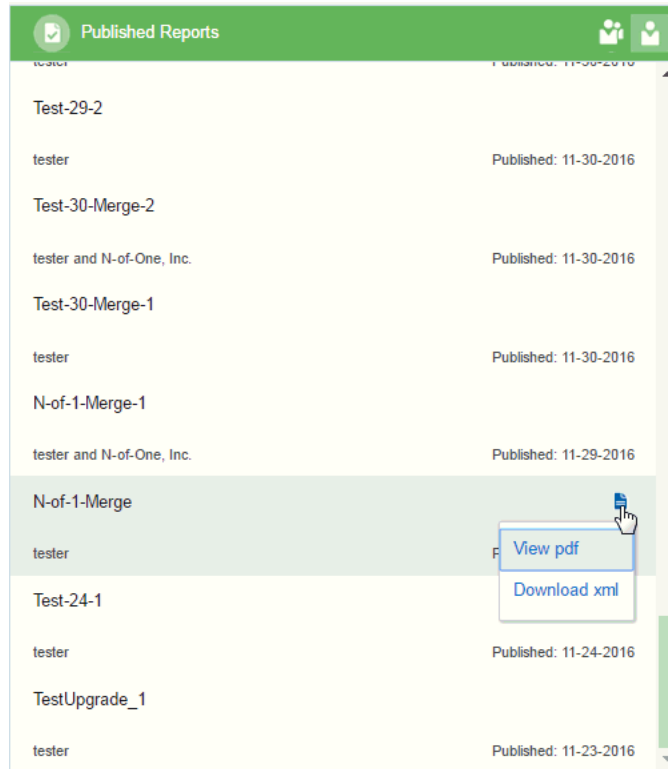
4.8.1 Viewing a Published N-of-One Standalone Report

You can view standalone N-of-One reports in either the PDF or XML formats.

Note: To view the **Download XML** option, the user must be assigned the pm_nofone_xml_expert_grp role.

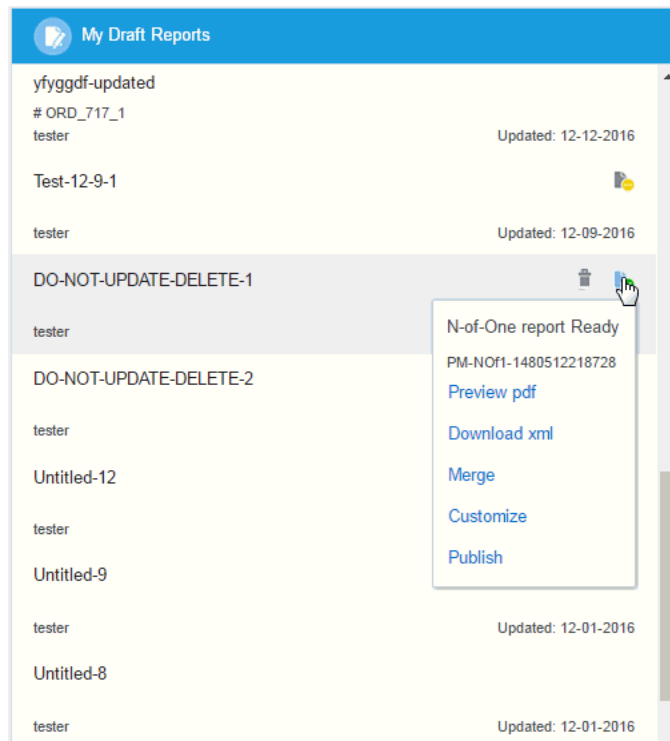
From the Published Reports Tab

Click the blue report icon on the published report.



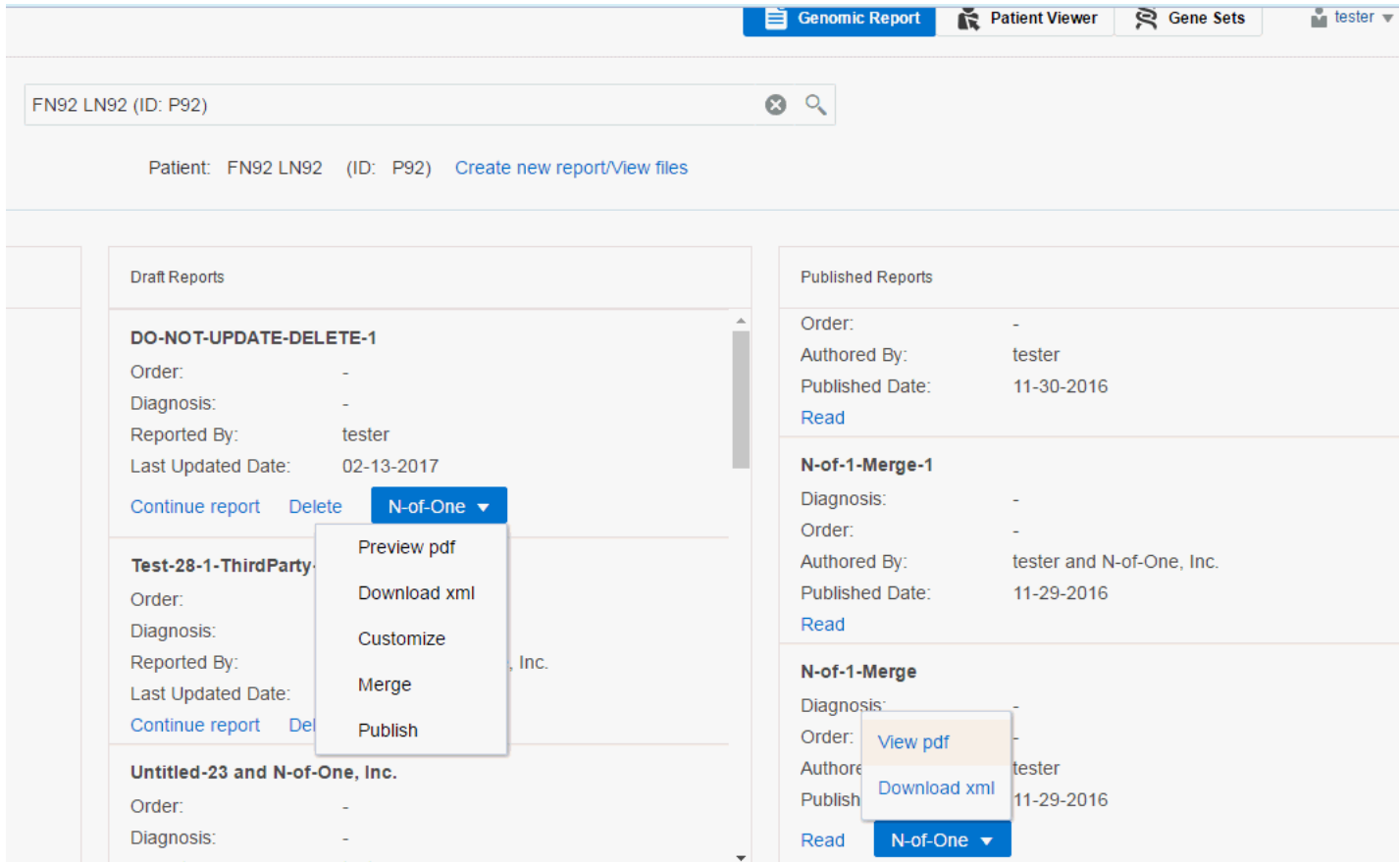
From the Draft Reports Tab

Click the blue report icon on the published report.



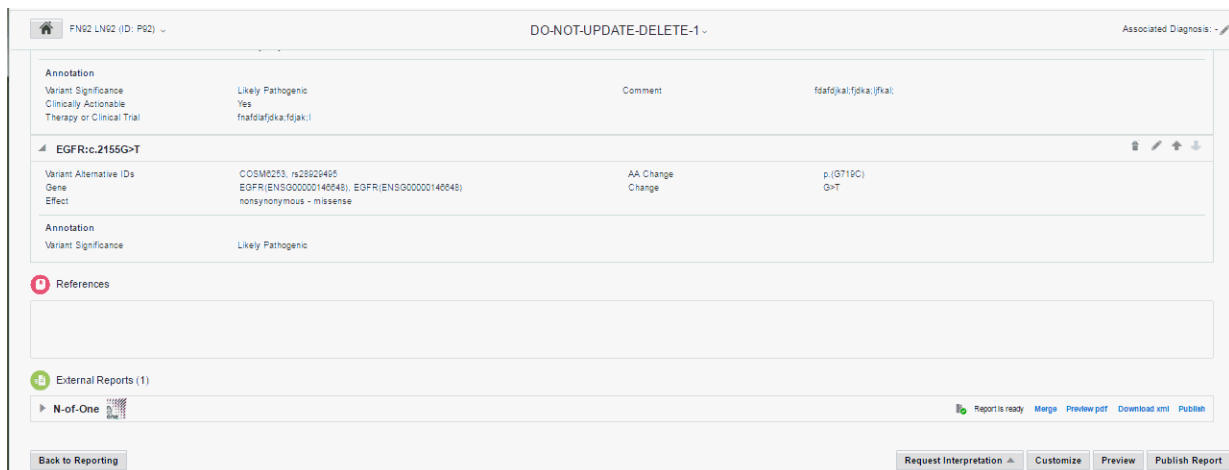
From the Search Tab

1. In the Search field, enter the patient ID.
2. All the draft and published reports for the patient are displayed. Click **N-of-One** to view the download option.



From Within a Report

Navigate to the **External Reports** section at the bottom of a report.




4.8.2 Merging Reports

You can publish the N-of-One report standalone or with the parent report. To publish them as one document, you must first merge the two reports together.


To merge the two reports:

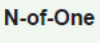

From Report Preview

1. Open the report that you want to merge.
2. Scroll down to **External Reports**.

 References

references: book from the

 External Reports (1)

 **N-of-One**  Report is ready [Merge](#) [Preview pdf](#) [Download xml](#) [Publish](#)



[Back to Reporting](#) [Request Interpretation](#) [Customize](#) [Preview](#) [Publish Report](#)

3. Click **Merge** on the right. A confirmation window is displayed.
4. Click **Yes**. The reports are merged.

From the Dashboard

1. Click **N-of-One** in the Draft Reports section.

Genomic Report Patient Viewer Gene Sets tester

FN92 LN92 (ID: P92)  

Patient: FN92 LN92 (ID: P92) [Create new report/View files](#)

Draft Reports	Published Reports
<p>DO-NOT-UPDATE-DELETE-1</p> <p>Order: -</p> <p>Diagnosis: -</p> <p>Reported By: tester</p> <p>Last Updated Date: 02-13-2017</p> <p>Continue report Delete N-of-One</p> <p>Test-28-1-ThirdParty:</p> <p>Order: -</p> <p>Diagnosis: -</p> <p>Reported By: Inc.</p> <p>Last Updated Date: -</p> <p>Continue report Delete</p> <p>Untitled-23 and N-of-One, Inc.</p> <p>Order: -</p> <p>Diagnosis: -</p>	<p>Order: -</p> <p>Authored By: tester</p> <p>Published Date: 11-30-2016</p> <p>Read</p> <p>N-of-1-Merge-1</p> <p>Diagnosis: -</p> <p>Order: -</p> <p>Authored By: tester and N-of-One, Inc.</p> <p>Published Date: 11-29-2016</p> <p>Read</p>

2. Click **Merge**. A confirmation window is displayed.
3. Click **Yes**. The reports are merged.

Annotation

This section describes all the tasks related to annotating variants. It includes the following sections:

- [Section 5.1, "Annotating Variants"](#)
- [Section 5.3, "Annotation Pane"](#)
- [Section 5.2, "Detailed Variant View"](#)

5.1 Annotating Variants

To annotate variants, perform the following steps:

1. Open the report in the reporting view.
2. Select the variants you want to annotate.
3. Click **Annotate** on the top right. The Annotation Pane appears.

The screenshot displays the Variant Annotation interface. The main panel shows variant details for **CHR2:38155074(G>A)**. The left sidebar has tabs for **Variant Reference Data**, **Genome Viewer: Dalliance**, and **External Information**. The right sidebar is the **Annotation** pane, which includes a **Significance** dropdown (set to **-Select One-**), an **Associated Diagnosis** dropdown (showing **CNRN_CD_4_VIN Name** and **INFA_UPDATED(CNRN_CD_VIN_INFA_4_UP**), a **Clinically Actionable** checkbox (unchecked), and a **Cell Line** dropdown (set to **-Select One-**). At the bottom of the Annotation pane are **Cancel** and **Save Annotation** buttons.

4. Enter details in the annotation pane.
5. Click **Save Annotation**. You will receive a confirmation.
6. Click **Yes**. The variant is annotated and the following icon appears next to it in the Reporting View.



The following entry appears in the Report Review pane.

Annotations (3)

BRCA2:c.9502-449A>G			
Variant Alternative IDs	rs517118	AA Change	-
Gene	BRCA2(ENSG00000139618), BRCA2(ENSG000139618)	Change	A>G
		Effect	non-coding
Annotation			
Variant Significance	Likely Pathogenic		
Clinically Actionable	Yes		

BRCA2:c.9648+244T>C			
Variant Alternative IDs	rs206344	AA Change	-
Gene	BRCA2(ENSG00000139618), BRCA2(ENSG000139618)	Change	T>C
		Effect	non-coding

You can delete or edit this information using the icons on the top right of this section.

5.2 Detailed Variant View

Edit Annotation

CHR1:9652700-9652744			
Variant Reference Data		Result Data	
Variant Alternative IDs	PIK3CD(ENSG00000171608), PIK3CD-AS1(ENSG00000179840)	Annotation Exists	true
Gene		Zygosity	het-ref, het-ref
Transcript		Genotype Quality	
Status	NOVEL	Somatic Status, Score	
Genomic Position	CHR1:9652700-9652744:+	Allele Read Count	6, 6
Change	CCGTGCTCAGGGCTCTG GAGTGGTGTGATCATTAAAG GACACGTGC>-	Reference Read Count	13, 13
Variant Effect	non-coding	Total Read Count	19, 19
Polyphen Impact		AD/DP Ratio	0.3158, 0.3158
SIFT Impact		Score VAF	24.59, 24.59
AA Change		Score EAF	
		RMS Base Quality	
		RMS Mapping Quality	
Genome Viewer: Dalliance			
Dalliance does not have support to display data for the present Assembly (alignment), contact your administrator to ensure it is configured properly.			
External Information			

This view displays:

- important reference details and metadata about each variant
- details about the given variant based on the result file it appeared in

Only molecular pathologists and researchers have access to this feature.

Note: A very small subset of variants may appear in multiple UI screens and reports to be associated with the placeholder record in the gene table with the name *NO GENE*.

A NO GENE gene is not a regular coding gene and can be safely ignored when displayed, with any mapped variant assumed to be *intergenic* unless mapped to another valid gene region.

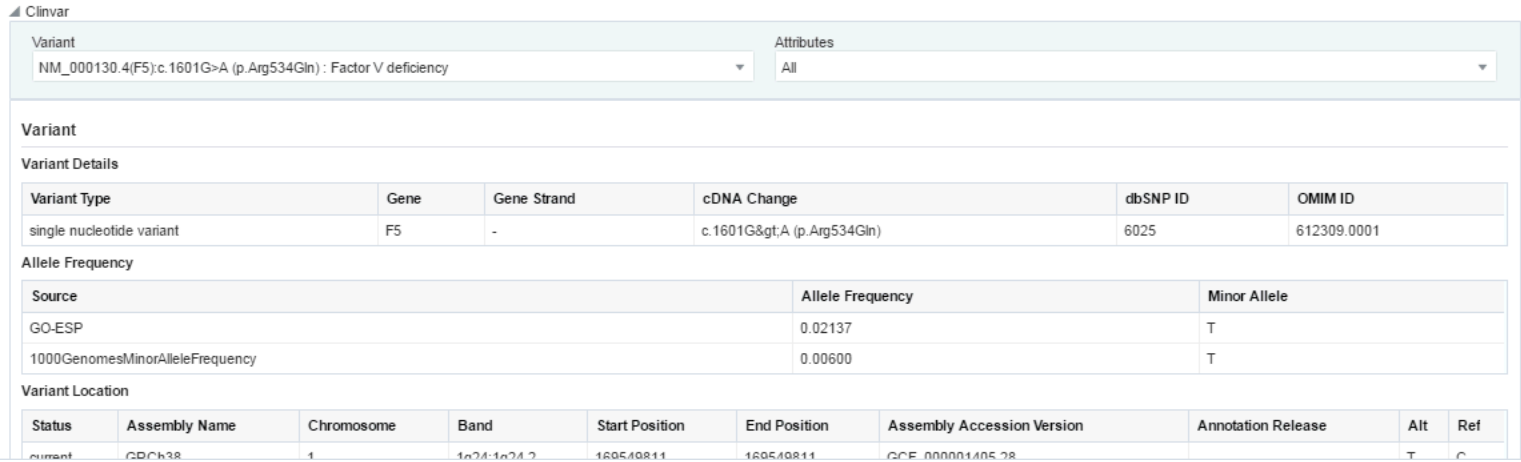
It lists the following information:

- Variant Reference Data
 - Variant Alternative IDs - Displays any other names that the variant may have
 - Gene - The gene containing the variant
 - Transcript - The transcript being used to determine the impact
 - Status - Can be either known or novel
 - Position - The position of the variant within the chromosome
 - Change - Basepair change
 - Effect - Based on the preferred transcript, it is the effect the variant has on resulting protein. Among the effects are missense, nonsense, noncoding and so on.
 - Polyphen Impact - The PolyPhen Impact of the variant
 - SIFT Impact - The SIFT impact of the variant
 - AA Change - Amino acid change
- Result Data
 - Annotation exists - Indicates whether variant is already annotated in the report
 - Zygosity - Variant zygosity. Similarity of alleles in an organism to reference.
 - Genotype Quality - Genotype Quality
 - Somatic Status, Score - Calculated ration of somatic likelihood
 - Allele Read Count - Number of reads that support the given allele
 - Reference Read Count - Number of reads that support the reference sequence
 - Total Read Count - Total number of reads
 - AD/DP Ratio
 - Score VAF - Positive or negative integer representing confidence in the call from CGI masterVar file
 - Score EAF - Positive integer representing confidence in the call from CGI masterVar file
 - RMS Base Quality - RMS base quality at this position
 - RMS Mapping Quality - RMS mapping quality at this position
- Genome Viewer: Dalliance - view variant and gene in embedded genomic browser screen against the annotation and reference or assembly information. The system checks if the Dalliance version of DNA display matches what is actively used for

the given report, that is, the Preferred Version of DNA used for a given Assembly set.



- External Information:
 - ClinVar - If subscribed, displays the reference information for a selected variant. Select a variant from the Variant drop-down list to view ClinVar reference information.



The following sections are displayed:

- * Variant - displays Variant Attributes including Variant Details, Allele Frequency, Variant Location
- * Disease Phenotype
- * Clinical Significance
- * ClinVar Submission Details

You can select which sections you want to view using the **Attributes** drop-down list. By default, all sections are displayed.

Clinvar

Variant

NM_000130.4(F5):c.1601G>A (p.Arg534Gln) : Factor V deficiency

Attributes

All

Select Attribute

All

Variant Attributes

Disease Phenotype

Clinical Significance

Submission Details

Variant

Variant Details

Variant Type	Gene	Gene Strand	cDNA C
single nucleotide variant	F5	-	c.1601G

Allele Frequency

5.3 Annotation Pane

The Annotation Pane lets you annotate variants with your comments, functional labels and so on. This pane contains the following default fields and can be fully customized by the administrator:

- Significance - has the values Pathogenic, Likely Pathogenic, Benign, Likely Benign, Unknown Significance. You can select any one or leave this blank.
- Associated Diagnosis - diagnosis that is associated with the variant.
- Clinically Actionable - this marks a variant as clinically important and highlights at the top of the report
- Therapy or Clinical Trial - Enter any clinical trials or therapies that are currently available
- Cell Line - has the values Somatic, Germline, Unknown. You can select one of them.
- Annotation for ClinVar - you can select relevant information from ClinVar in the Tabular View and add this information to the annotations.

Note: You must subscribe to ClinVar to access their reference information.

- N-of-One - Selecting the check box **Send for Interpretation** will mark this variant as a candidate to send for N-of-One interpretation.
- Adverse Events - select adverse events, if any, for example, Severe Allergic Reaction.
- Comments - enter your comments on the report

Annotation

1 variant(s)

▲

Variant Significance

Likely Pathogenic

▼

The Associated Diagnosis

Select

Clinically Actionable

☒

Therapy or Clinical Trial

Cell Line

-Select One-

▼

External Information

▲ ClinVar

▲ N-of-One

Send for Interpretation

☒

Adverse Event

Select

Comments

Patient Viewer

This chapter describes the patient viewer tab in OHPM. It contains the following sections:

- [Section 6.1, "Introduction"](#)
- [Section 6.2, "Viewing Patient Details"](#)

6.1 Introduction

This tab lets you view detailed patient information.

When you click the Patient Viewer tab from the reporting view, you will not see patient details. You must search for the patient to see their details.

6.2 Viewing Patient Details

The screenshot shows the Oracle Healthcare Precision Medicine Patient Viewer interface. At the top, there is a navigation bar with the Oracle logo and the text "Healthcare Precision Medicine". To the right of the logo are three tabs: "Genomic Report", "Patient Viewer" (which is highlighted in blue), and "Gene Sets". Further right is a user profile icon labeled "tester" with a dropdown arrow. Below the navigation bar is a sidebar on the left titled "Selections". Inside the sidebar, there is a "Patient:" label above a search input field with a magnifying glass icon. Below this are two sections: "Clinical Data" and "Genomic Data", each with a help icon. The "Clinical Data" section has checkboxes for "Diagnosis", "Procedure", "Medication", "Test or Observation", "Specimen Samples Collected", "Clinical Encounter", "Patient History", and "Consent". The "Genomic Data" section has checkboxes for "Genomic Reports", "Specimen with Genomic Results", "Derived Files", and "File Lineage". At the bottom of the sidebar are "Reset" and "Submit" buttons. The main content area on the right is currently empty.

1. Enter a patient ID in the **Patient** field. A drop-down list displays matching results. You can search for a patient by clicking the Search icon.
2. Select the **Clinical Data** and **Genomic Data** categories you want to view for the patient.
3. Click **Submit**. The patient data is displayed.
You can export information from each of these reports to a Microsoft Excel format by clicking **Export**.

Demographics

Patient ID: 1
Age: 31
Contact Info:

First Name: Jane
Date of Birth: 1/3/1950
Street Address: 001-HOME501
STRT_ADDR1
STRT_ADDR2

Last Name: MATHUR
Deceased: Y
City: Anchorage

Gender: female
Deceased Date: 6/1/1981
Zipcode: 99508

Marital Status: Widowed
Ethnicity: Procedure,Unknown
County: Stopped

Related Patients: (PRTY_RLSHTYPD_FAM)
Race: American Indian,White
State: Public Transport

Country: Neulasta

Diagnosis

Diagnosis Name	Code	Age at First Onset (In Years)	Onset Date	Date Reported	End Date	Status	Anatomical Site Name	Anatomical Site Code	Data Source
Diverticulitis	CNRN_CD_DVRT...	17	3/23/2016	3/23/2016	3/23/2016	Recurring			EHA(E

Procedure

Procedure Name	Procedure Code	Procedure Type	Type Code	Start Date	End Date	Outcome	Anatomical Site Code	Anatomical Site Name	Data Source
PROC_CD_CODE_NM_3	PROC_CD_COD...	Procedure Code	PROC_CD	1/4/2011	1/4/2011				EHA(EHA)
PROC_CD_CODE_NM_1	PROC_CD_COD	Procedure Code	PROC_CD	1/3/2011	4/24/2009	OUTCOM_CD_V&I	SPCMN_AN&_SI	Female	EHA(EHA)

6.3 Reports Available in the Patient Viewer

The following reports can be viewed for a patient in the patient viewer.

Clinical Data

- Demographics
- Diagnosis
- Procedure
- Medications Taken
- Test or Observation
- Specimen Samples Collected
- Clinical Encounter
- Patient History
- Consent

Genomic Data

- Genomic Reports
- Specimen with Genomic Results
- Derived Files
- File Lineage

6.3.1 Clinical Data

The attributes displayed for each section are listed below:

- **Demographics**

Patient ID, First Name, Last Name, Gender, Marital Status, Related Patients, Age, Date of Birth, Deceased, Deceased Date, Ethnicity, Race, Street Address, City, Zip code, County, State, Country

- **Diagnosis**

Diagnosis Name, Code, Age at First Onset (in Years), Onset Date, Date Reported, End Date, Status, Anatomical Site Name, Anatomical Site Code, Data Source

- **Procedure**

Procedure Name, Procedure Code, Procedure Type, Type Code, Start Date, End Date, Outcome, Anatomical Site Name, Anatomical Site Code, Data Source

- **Medications Taken**

Medication Name, Medication Code, Description, Start Date, End Date, Dosage, Dosage Units, Outcome, Data Source

- **Test or Observation**

Test or Observation Name, Test or Observation Code, Type, Date, Numeric Result (Units) [Reference Range], Result (text), Data Source

- **Specimen Samples Collected**

Specimen Type Name, Specimen Type Code, Date Collected, Anatomical Site Name, Anatomical Site Code, Amount, Units, Data Source

- **Clinical Encounter**

Encounter Id, Encounter Type, Start Date, End Date, Additional Details (clicking this provides more details about the encounter like Event Name, Event Type, Start Date, End Date, Location Name (Location Type)), Data Source

- **Patient History**

History or Risk Name, History or Risk Code, Type, Start Date, End Date, Frequency (Units), Amount (Units), Text Value of Code, Applicable To, Data Source

- **Consent Forms Signed**

Consent Type Name, Consent Type Code, Description, Consent Status Name, Status Code, Start Date, End Date, Data Source

6.3.2 Genomic Data

Genomic data is displayed in four sections as follows:

Table 6–1 Genomic Report

Column Heading	Definition	Sample Value or Values
Report Id	Report Name	Titled Report
Diagnosis	Diagnosis in the order	Diverticulitis
Genetic Test	Genomic tests performed	Panel_13
Report Author	User that created the report	user1
Publish Date	Date the report was published	6/20/2016
Order ID (Lab)	Order ID from the lab	Order1

Table 6–2 Specimens with Genomic Results

Column Heading	Definition	Sample Value or Values
Specimen Id	Specimen belonging to the selected patient or subject	HG00096
Specimen Vendor Id	Specimen Vendor for that specimen	VCF
Version Label	Represents Assembly Version (DNA reference version against which this data was loaded)	GRCh37(V68)
Sequence Variants Results	Whether the sample has sequence variants results	Yes / No
Copy Number Variation Results	Whether the sample has copy number variants results	Yes / No
Single Channel Microarray Results	Whether the sample has single channel results	Yes / No
Dual Channel Microarray Results	Whether the sample has dual channel results	Yes / No
Rna-Seq Expression Results	Whether the sample has rna sequencing results	Yes / No

Table 6–3 Derived Files

Column Heading	Definition	Sample Value or Values
Filename	Filename including path of the genomic file stored including path	C:/John_specimen01.vcf
File Size in MB	Size of the File in MB	Numeric, positive integer
File URI	URI of the file	File://trc/abc.maf
Alternate Filepath	The FTP path of the file	
File Type, Version	Type of file and Version	Variant Call Format, 4.1
Result Type	Type of result data in the file	Sequencing, Copy Number Variation, Gene Expression (2-channel or single channel)
Alignment Version (DNA Reference Version)	Represents Assembly Version (DNA reference version against which this data was loaded)	GRCh37(v68)
Total Number of Specimen in File	Total number of specimen that the file contains where not all specimen belong to the selected patient	Numeric, positive integer
Last Updated	When record was last updated	19-Mar-2012

Table 6–4 File Lineage

Column Heading	Definition	Sample Value or Values
Parent Filename	Parent Filename including path of the genomic file stored including path	C:/John_specimen01.BAM
File Size in MB	Size of the File in MB	Numeric
File URI	URI of the file	File://trc/abc.maf
Alternate Filepath	The FTP path of the file	

Table 6–4 (Cont.) File Lineage

Column Heading	Definition	Sample Value or Values
File Type, Version	Type of file and Version	Binary Alignment Map, 1.0
Alignment Version (DNA Reference Version)	Represents Assembly Version (DNA reference version against which this data was loaded)	GrCH37
Last Updated	When record was last updated	19-Mar-2012
Derived Child Files: File - Specimen Id, Vendor Id	Information about Derived Results files that have their lineage based on the particular Low Level file.	C:/John_specimen01.vcf - HG00096_1,HarvardLab1

This section describes the gene set tab in OHPM. It contains the following sections:

- [Section 7.1, "Introduction"](#)
- [Section 7.2, "Gene Sets List"](#)
- [Section 7.3, "Adding or Editing Gene Sets"](#)
- [Section 7.4, "Managing Gene Sets"](#)

7.1 Introduction

The Gene Sets tab is a way to collect genes into groupings or lists. There will be a list of genes you work with regularly, which may be as small as a couple of genes or large, consisting of hundreds of genes.

Often you may keep several such sets, each characterizing a group of genes with particular attributes; for example, transcription factors, genes involved in some regulation mechanism, genes that have been implicated to contribute to a particular characteristic and so on. The concept of Gene Set lets you group genes into convenient *collections* for reuse.

7.2 Gene Sets List

My Gene Sets section lists the recently updated gene sets. Clicking the selected gene sets loads it in the Manage Gene Sets/Manage window.

7.3 Adding or Editing Gene Sets

The Gene Sets New/Edit section helps you group genes as a set. You can group a few genes for quick search retrieval or for use in a cohort query. For example, if you have a set of 10 genes that you plan to work with or always search for results based on genes from within this particular array of 10, you can create a new Gene Set to collect these 10 genes into one group.

A gene can be part of many different Gene Sets. Also, you can create many different gene sets, each gene set with a different combinations of genes.

Note:

1. There are no restrictions regarding genes that can be included in any particular Gene Set. You can mix genes from multiple species, or assembly versions.
2. Gene Sets are Private only and cannot be shared among users.
3. Gene Set names are not case- sensitive.
4. The file size limit for the **Upload from File** option is less than 5MB when genes are matched using Equals. When using Contains or Starts With option, the list of genes cannot be longer than 512 characters.

Perform the following steps to create a new gene set:

1. Specify genes either by:
 - selecting **Type in Gene Set**. You can search for genes using their Ensembl or HUGO names. You can enter multiple gene names separated by space, comma or semicolon.
 - selecting **Add from Existing Gene Set**.
 - selecting **Upload from File**. Select a file from your desktop where the genes are delimited by comma, space or tab.
2. Select the **Species**.
3. Select the **Assembly Version**.
4. Click **Submit**.
5. A list of genes appears in the **Available Genes** section. Using the arrow buttons, move the required genes to the **Final Gene Set** section. These are the genes that will comprise a gene set.

You can select to move all genes from the left hand side panel to the right hand side panel using the following icon:

6. After you have selected all required genes, enter a **Gene Set Name**. You can either preserve the selection as a new Genet Set or save over an existing one.

▲ Step 2: Save Gene set

* Gene Set Name

Description

Privacy ☐ Private ☐

Submit

7. Enter a description for the gene set.
8. Click **Submit**. Your gene set is created.

7.4 Managing Gene Sets

The Gene Sets Manage screen lets you view the individual genes (members) included in a given Gene Set and its metadata. You can select a specific Gene Set to view by using its name and click **Submit** to view the Gene Set's detailed information.

1. Enter a **Gene Set**.

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[Gene Sets List](#)
[Gene Sets New/Edit](#)
[Gene Sets Manage](#)

* Gene Set

You can search for a gene set by clicking the magnifying glass icon.

Select Gene Set

Gene Set Name

Contains

doctest

Search

Reset

case insensitive

Gene Set	Last Updated	Owner
No data to display.		

Cancel

Submit

2. After selecting the gene set, click **Submit**. Detailed information for the gene set is displayed.

Gene Sets List

Gene Sets New/Edit

Gene Sets Manage

* Gene Set

doctest

Clear

Submit

Print

Gene Set Description:

Gene Set Name	doctest
Description	
Owner	tester
Created	05/20/2016 09:51 PM PDT
Privacy	Private
Last Updated	05/20/2016 09:51 PM PDT
Species(Gene C...	Homo sapiens(2)

Export

Delete Gene Set

Gene Set Members:

Gene Name	Hugo Name	Species
ENSG00000148377	ID12	Homo sapiens

Export

Each Gene Set's metadata includes the name, description given by the user, owner of the gene set, privacy setting, the creation and update dates and summary of how many genes are in a gene set.

7.4.1 Exporting a Gene Set

You can export the gene set data to a Microsoft Excel worksheet (.xls) file. Perform the following steps to export a gene set:

1. In the Gene Set Manage tab, search for the gene set you want to export.
2. Click **Export** to export the Gene Set Description or Gene Set Data.
3. You will receive a warning that the export process will take a while. Click **OK** to proceed or **Cancel** to stop the export.

Finally, you can delete a Gene Set using the **Delete** button. A confirmation box appears to ensure you are performing the proper action.

7.4.2 Printing Gene Set Data

Perform the following steps to print gene set data:

1. In the Gene Set Manage tab, search for the gene set you want to print.
2. Click **Print** on the right. Your printer settings appear.
3. Select the printer and click **OK**.

7.4.3 Deleting a Gene Set

Perform the following steps to delete a gene set:

1. In the Gene Set Manage tab, search for the gene set you want to delete.
2. Click **Delete Gene Set**.
3. A confirmation box appears. Click **Yes** to delete the gene set.

Note: This deletion will only soft-delete a Gene Set. This implies that the actual Gene Set record is still in the database, but it can only be restored with the help of a System Administrator.
