



## Beneficios de Implementar la Federación GNUHealth en centros y redes de Salud



**GNUHealth**  
FEDERATION

[www.gnuhealth.org](http://www.gnuhealth.org)

Luis Falcón, MD



## Luis Falcón

Presidente, GNU Solidario

Autor de GNU Health

[falcon@gnuhealth.org](mailto:falcon@gnuhealth.org)

## Educación & Profesión

- Científico de la computación
- Médico
- Genómica y Genética Médica

## Activismo

- Medicina Social
- Derechos de los Animales





- **GNU Solidario**

- La ONG detrás de GNU Health
- Organización sin fines de lucro
- Con ámbito geográfico global
- Focalizada en Medicina Social

- **Proyecto oficial de GNU**

- GNU Health es un proyecto oficial de GNU
- Está alojado en Savannah
- Réplicas alrededor del mundo
- Comunidad internacional de usuarios



# GNU Solidario en el Mundo



HEADQUARTERS



HEALTH INSTITUTIONS



ACADEMIC INSTITUTIONS



REGIONAL OFFICES



ANIMAL RIGHTS



HUMANITARIAN MISSIONS





# Social Medicine & Health Informatics





# GNU Health en el Mundo



GNUHealth Con 2022  
Beneficios de la Federación GNU Health en centros y redes de salud

Luis Falcón  
18 de noviembre, Las Palmas de Gran Canaria

# Naciones Unidas



# Organización Mundial de la Salud - OMS



## Calendario de vacunaciones



Entrenamiento a representantes de la OMS de África occidental

Malaria, TB and HIV modules  
Lista de Medicamentos esenciales  
Enfermedades tropicales  
ICD-10 ICPM  
Tablas de crecimiento pediátricos



Implementación de GNU Health en el hospital de Bafia, Camerún con la Organización Mundial de la Salud



# GNU Health declarado Digital Public Good



Digital  
Public  
Goods  
Alliance





# Academia



United Nations University, Kuala Lumpur, Malasia



Univ. Palermo, Italia



Universidad de Entre Ríos, Argentina

**HST.936: Global Health Informatics to Improve Quality of Care**

The 2015 iteration of our course will focus on [Public Health Emergencies and Humanitarian Crises](#).

Classes begin: February 6, 2015  
Fridays 9am - 11am ET (GMT -5)  
Room: [09-057](#)

Harvard / MIT, Boston, United States



Luis Falcón  
18 de noviembre, Las Palmas de Gran Canaria





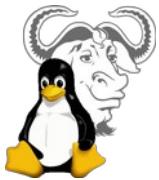
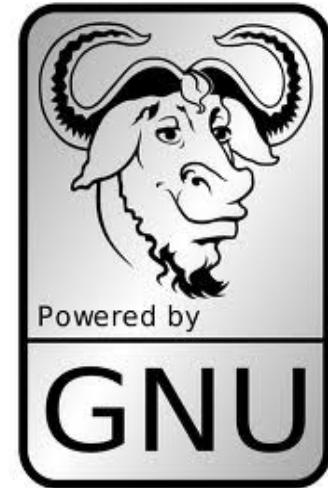
# Proyecto oficial de GNU

Proyecto oficial de GNU

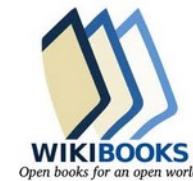
Documentación abierta

Basado en tecnología Libre

Comunidad internacional

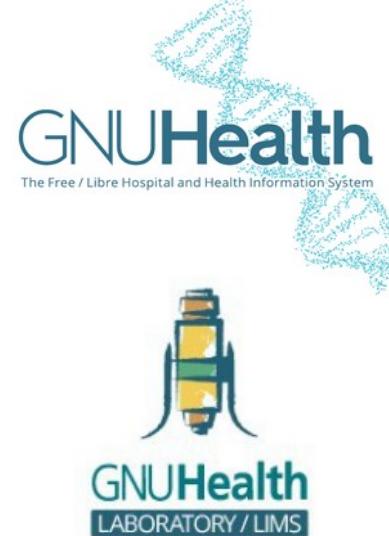


PostgreSQL

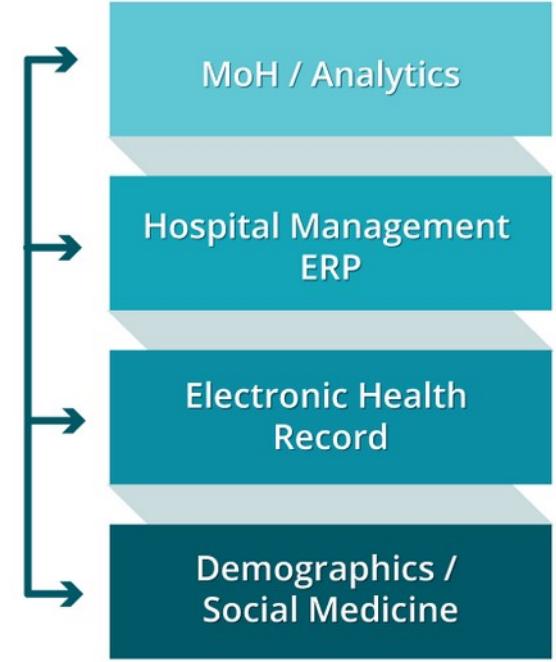
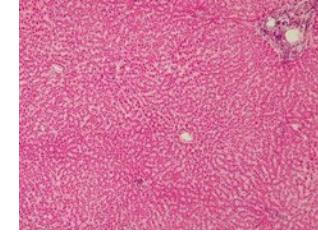
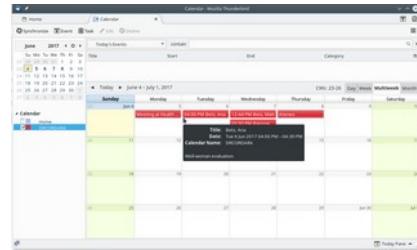
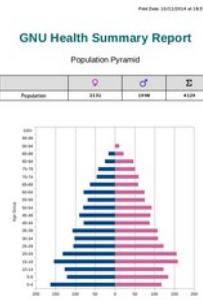
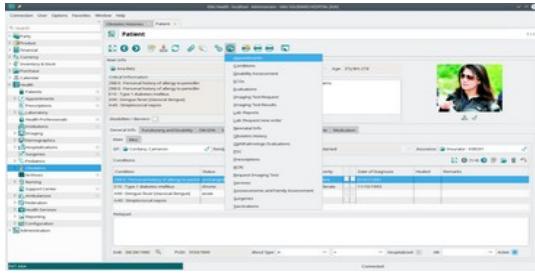




# Componentes del ecosistema GNU Health



# GNU Health HMIS



# GNUHealth

# GNU Health en Dx por imágenes

- Artikel
- Währungen
- Health
  - Books of Life
  - Patients
  - Appointments
  - Prescriptions
  - Health Professionals
  - Institutions
- Imaging
  - Orthanc
  - Patients
  - Studies
  - Dx Imaging - New
  - Dx Imaging Requests
  - Dx Imaging - Results

ORT<sup>H</sup>ANC



GNUHealth Con 2022  
Beneficios de la Federación GNU Health en centros y redes de salud

**Studies**

◀ ▶ 🔍
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Patient: **PHENIX**

Date: **27.09.2005**

Referring Physician: **CHIR-PED^CHIR-PE**

UUID: **49974143-ec23cb52-6b2a1c46-14d5daa0-0822ce1a**

Server: **Orthanc\_Demo**

Description: **CT2 TÊTE, FACE, SINUS**

Institution: **HUG**

ID: **1361**

URL: **🌐**

Test: **🔍**

Orthanc Demo > Patient > Study > Series - Mozilla Firefox

Orthanc Demo > Patient > Study > Series

Patient: BRAINX  
PatientBirthDate: Tuesday, March 1, 1949  
PatientGender: M  
PatientID: 00009  
PatientName: TUDORPEEC, RAY  
PatientSex: M  
PatientStatus: Active  
PatientType: Patient  
ReferringPhysician: CHIR-PED^CHIR-PE  
Requester: TUDORPEEC, RAY  
RequesterProcedure: IRM cérébrale, neuro-c  
RequesterStatus: Active  
RequesterType: Radiologist  
StudyID: 21021516  
StudyInstanceUID: 2.10.841.11.368.832.20.211.5000

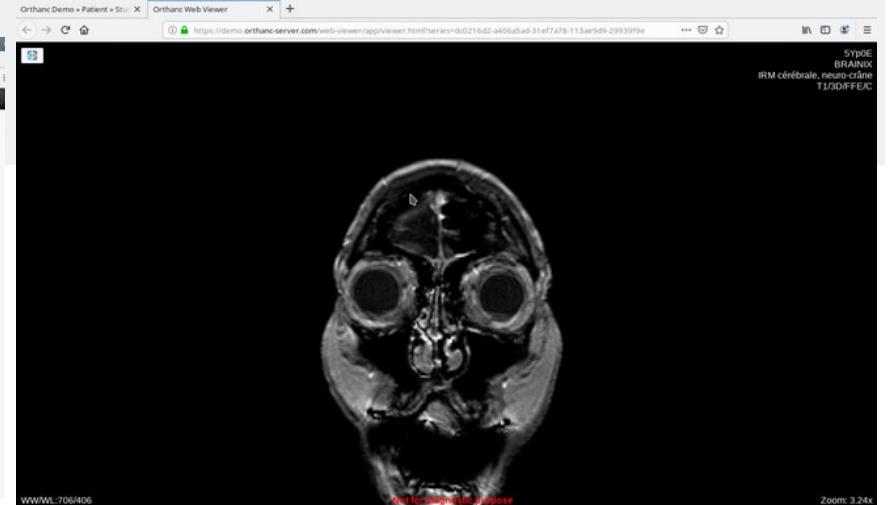
Study: IRM cérébrale, neuro-crâne  
Modality: IRM  
ProtocolName: TUDORPEEC, RAY  
ProtocolType: IRM cérébrale, neuro-crâne  
Series: T1/DIFF/CE  
Modality: MR  
ProtocolName: TUDORPEEC, RAY  
ProtocolType: IRM cérébrale, neuro-crâne  
SeriesNumber: 801  
SeriesInstanceUID: 2.10.841.11.368.832.20.211.5000

Instances:

- Instance: 1  
SOPInstanceID: 1.3.46.679588.21.0.0.11.4.2.0.8743.5.5396.2006120114483578701  
TemporalPositionIdentifier: 1
- Instance: 2  
SOPInstanceID: 1.3.46.679588.21.0.0.11.4.2.0.8743.5.5396.2006120114483564700  
TemporalPositionIdentifier: 1
- Instance: 3  
SOPInstanceID: 1.3.46.679588.21.0.0.11.4.2.0.8743.5.5396.2006120114483576700  
TemporalPositionIdentifier: 1
- Instance: 4  
SOPInstanceID: 1.3.46.679588.21.0.0.11.4.2.0.8743.5.5396.2006120114483550000  
TemporalPositionIdentifier: 1
- Instance: 5  
SOPInstanceID: 1.3.46.679588.21.0.0.11.4.2.0.8743.5.5396.2006120114483543000  
TemporalPositionIdentifier: 1
- Instance: 6  
SOPInstanceID: 1.3.46.679588.21.0.0.11.4.2.0.8743.5.5396.2006120114483543000  
TemporalPositionIdentifier: 1
- Instance: 7  
SOPInstanceID: 1.3.46.679588.21.0.0.11.4.2.0.8743.5.5396.2006120114483520000  
TemporalPositionIdentifier: 1
- Instance: 8  
SOPInstanceID: 1.3.46.679588.21.0.0.11.4.2.0.8743.5.5396.2006120114483520000  
TemporalPositionIdentifier: 1

Send to DICOMweb server  
Transfers accelerator  
Orthanc Web Viewer

Interact



Orthanc Demo > Patient > Study > Series - Mozilla Firefox

Orthanc Demo > Patient > Study > Series

STUDY  
BRAINX  
IRM cérébrale, neuro-crâne  
T1/DIFF/CE

WW:706406  
Zoom: 3.24x

# GNU Health embedded



El proyecto GNU Health embedded nos permite incorporar GNU Health en dispositivos de una sola placa. Desde gestión de Unidades Domiciliarias, centros de salud, Laboratorios o centros de investigación



# MyGNUHealth: The Libre Personal Health Record

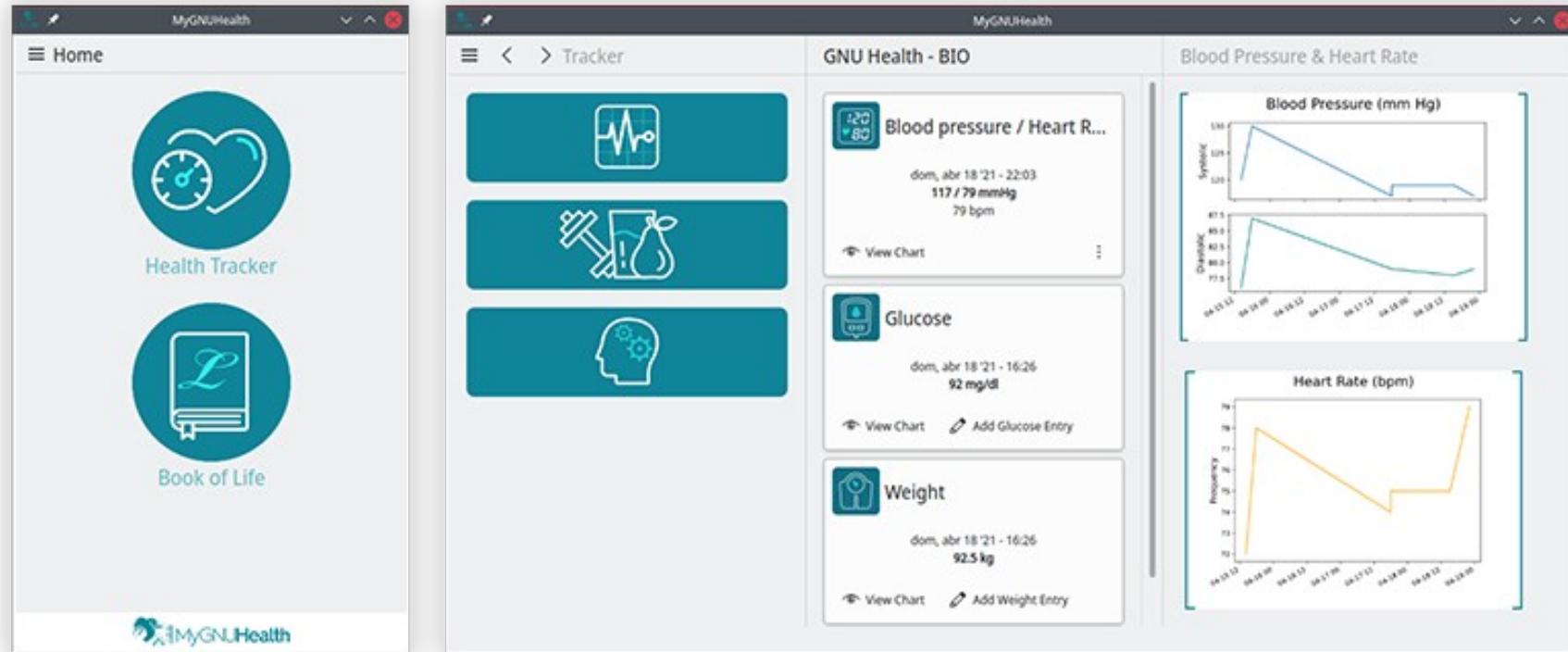
MyGNUHealth

THE GNU HEALTH PERSONAL HEALTH RECORD

Login



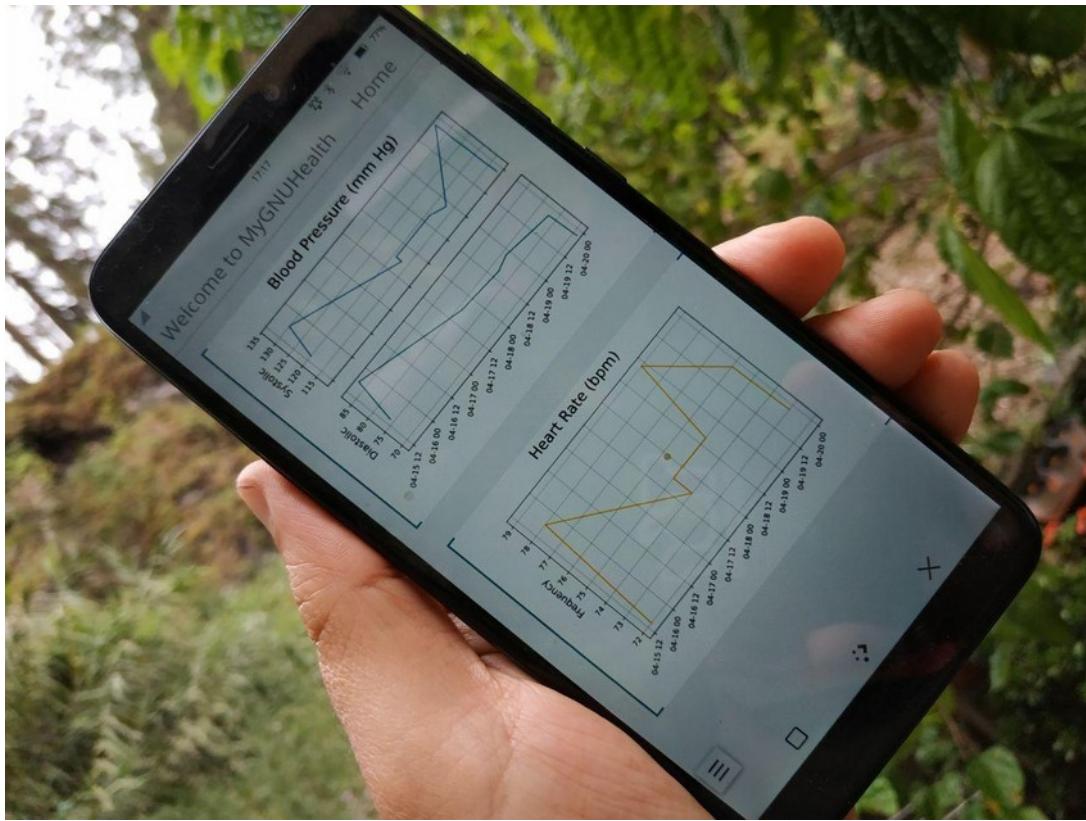
# MyGNUHealth en desktops / laptops



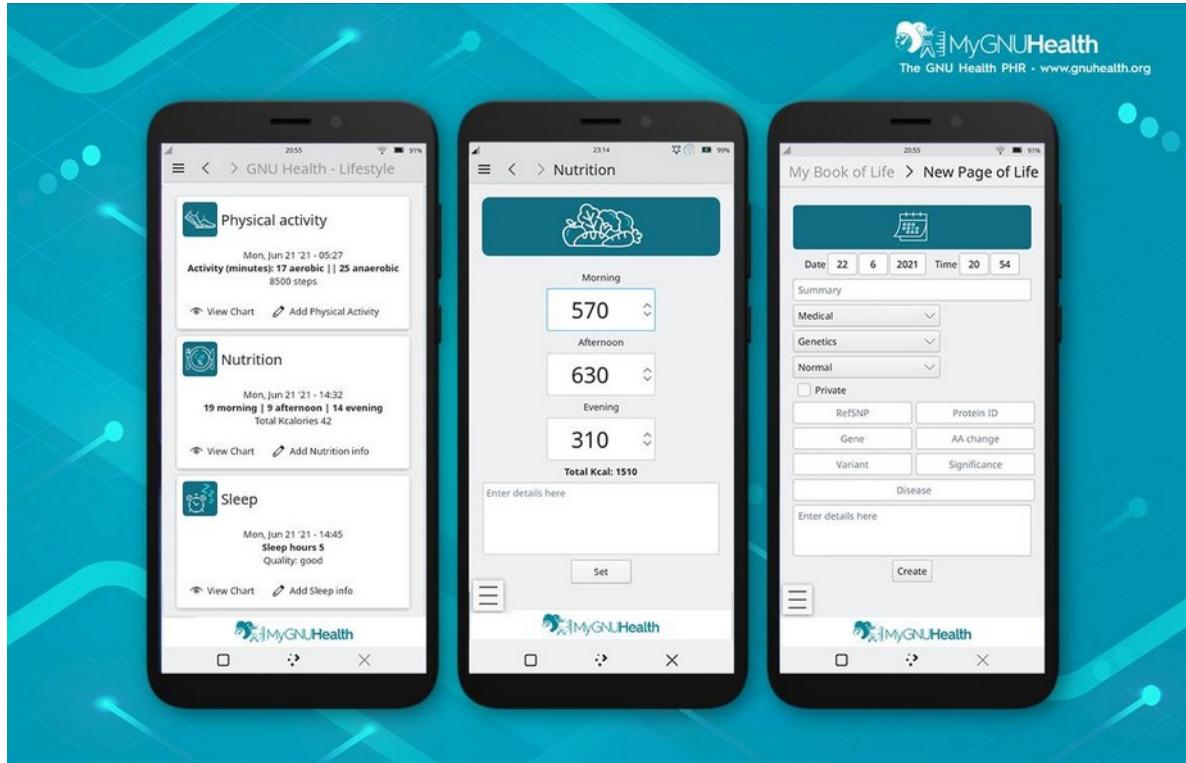
The image shows three windows of the MyGNUHealth desktop application:

- Home:** Displays a "Health Tracker" icon (heart with a clock) and a "Book of Life" icon (book with a "L" shape). Buttons for "View Chart" and "Add Entry" are shown for each.
- Tracker:** Shows three categories: "Blood pressure / Heart R..." (with a blood pressure monitor icon), "Glucose" (with a blood glucose meter icon), and "Weight" (with a person icon). Each category has a "View Chart" and "Add Entry" button.
- BIO / Blood Pressure & Heart Rate:** This window is split into two main sections. The left section, titled "GNU Health - BIO", contains the "Blood pressure / Heart R...", "Glucose", and "Weight" entries from the Tracker window, each with its own "View Chart" and "Add Entry" buttons. The right section, titled "Blood Pressure & Heart Rate", contains two line graphs: "Blood Pressure (mm Hg)" and "Heart Rate (bpm)". The "Blood Pressure" graph shows systolic and diastolic pressure over time, with values decreasing from 120/80 to 92/62. The "Heart Rate" graph shows heart rate in bpm over time, with values decreasing from 78 to 64 and then rising to 74.

# MyGNUHealth en Linux Phones y VollaOS (dev)

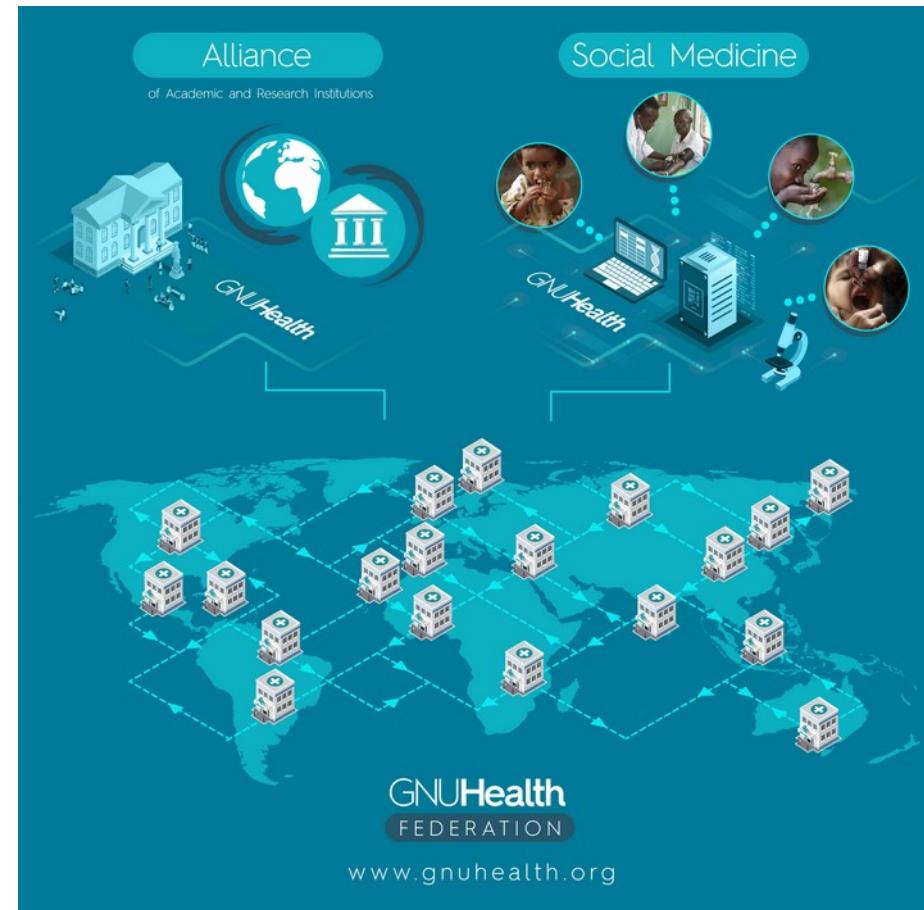


# MyGNUHealth





# Integrando y agregando recursos (técnicos y humanos) en GNU Health Federation



# GNU Health Federation



Nodos

Servidor de Mensajes

Sistema de Información



# MyGNUHealth en la Federación GH



GNUHealth  
FEDERATION

 GNUSolidario

Cada persona es un nodo

Actualización en tiempo real con su profesional y sistema de salud

Control sobre qué comparte

Disminuye la carga en el sistema de salud pública

Convierte y empodera al ciudadano en un actor principal del sistema de salud



# Observatorio epidemiológico en tiempo real



# GH Federation en la Investigación de enf. neurodegenerativas y cáncer

GNU Health - admin@localhost/genetics - Administrator - GNU SOLIDARIO HTAL [Euro]

Window Help

Variant Phenotypes

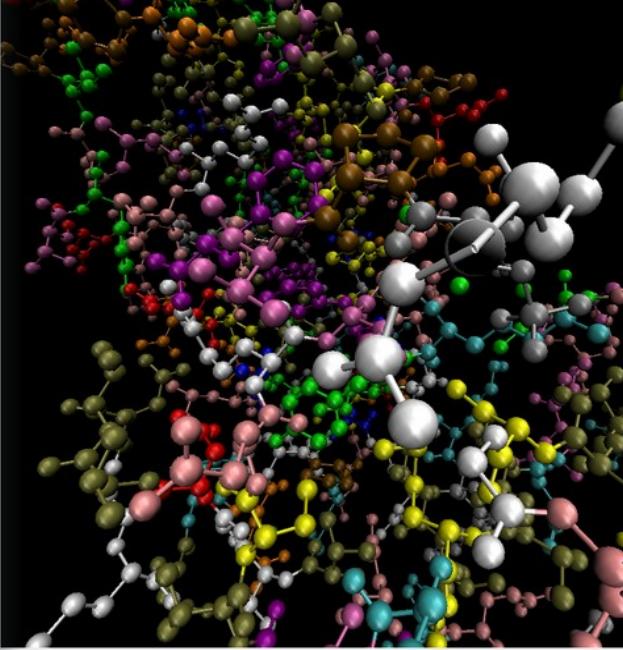
**Variant Phenotypes** 17 / 40

BRCA1

Gene & Protein	Variant	Phenotype
BRCA1 (P38398):breast cancer 1, early onset	VAR_007778:p.Thr1025Ile	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_007781:p.Val1047Ala	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_007782:p.Pro1150Ser	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_007796:p.Ala1708Glu	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_007799:p.Met1775Arg	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_020679:p.Glu230Lys	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_020680:p.Glu230Lys	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_020683:p.Asp749Tyr	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_020690:p.Ser1187Ile	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_020691:p.Gln1200His	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_020692:p.Arg1204Ile	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_020693:p.Lys1207Asn	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_020695:p.Ser1217Tyr	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_063212:p.Met1775Lys	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_075666:p.Arg1699Trp	DI-02602:Breast cancer
BRIP1 (Q9BX63):BRCA1 interacting protein C-t	VAR_020896:p.Pro47Ala	DI-02602:Breast cancer
BRIP1 (Q9BX63):BRCA1 interacting protein C-t	VAR_020900:p.Met299Ile	DI-02602:Breast cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_007757:p.Cys61Gly	DI-01655:Ovarian cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_020702:p.Cys1697Arg	DI-01655:Ovarian cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_075666:p.Arg1699Trp	DI-01655:Ovarian cancer
BRCA1 (P38398):breast cancer 1, early onset	VAR_020679:p.Glu10Lys	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398):breast cancer 1, early onset	VAR_020680:p.Glu23Lys	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398):breast cancer 1, early onset	VAR_020690:p.Ser1187Ile	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398):breast cancer 1, early onset	VAR_020691:p.Gln1200His	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398):breast cancer 1, early onset	VAR_020695:p.Ser1217Tyr	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398):breast cancer 1, early onset	VAR_020696:p.Phe1226Leu	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398):breast cancer 1, early onset	VAR_020697:p.Arg1243Gly	DI-01559:Breast-ovarian cancer, familial, 1
BRIP1 (Q9BX63):BRCA1 interacting protein C-t	VAR_023700:p.Gln255His	DI-01603:Fanconi anemia complementation g
BRIP1 (Q9BX63):BRCA1 interacting protein C-t	VAR_023702:p.Ala349Pro	DI-01603:Fanconi anemia complementation g
BRIP1 (Q9BX63):BRCA1 interacting protein C-t	VAR_023703:p.Trp647Cys	DI-01603:Fanconi anemia complementation g
BRIP1 (Q9BX63):BRCA1 interacting protein C-t	VAR_023704:p.Arg707Cys	DI-01603:Fanconi anemia complementation g

Connected

VMD 1.9.4a12 OpenGL Display



llm.vmd — Konsole <2>

```

Info) Angles: 0 Dihedrals: 0 Improper: 0 Cross-terms: 0
Info) Bondtypes: 0 Angletypes: 0 Dihedraltypes: 0 Improper
Info) Residues: 224
Info) Waters: 3
Info) Segments: 1
Info) Fragments: 5 Protein: 2 Nucleic: 0
0

```

# Propuesta GNU Health a nuestros gobiernos

## ID único

Para usar en todo el sistema nacional de salud, e incluso a nivel global

## Modelo Federado

Actualización demográfica y médica en tiempo real, disponible en todos los centros del país

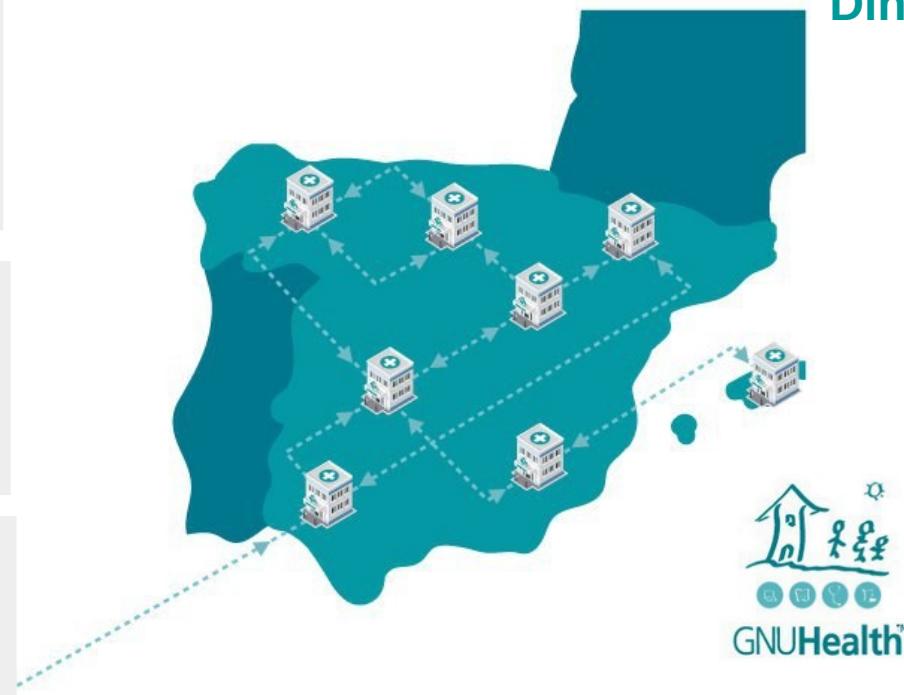
## Empoderar la comunidad

La persona como componente activo del sistema de salud

## Dinero Público, código Público!

**Software Libre:** No debe haber código escondido ni cajas negras en salud pública

La informática médica será un **bien público**



Ahorro de millones de Euros en licencias que se pueden destinar fortalecer el sistema público de salud

# GNU Health es un proyecto social, con algo de tecnología



Santiago del Estero, Argentina, 2006

# ¡Gracias!



<https://www.gnusolidario.org/support>



# ¡Gracias!



[www.gnuhealth.org](http://www.gnuhealth.org)



[@gnuhealth@mastodon.social](https://@gnuhealth@mastodon.social)



[info@gnuhealth.org](mailto:info@gnuhealth.org)