EASIGEN-DS DESIGN STUDY FOR A EUROPEAN INFRASTRUCTURE ON ADVANCED GENOMICS TECHNOLOGIES HORIZON-INFRA-2024-DEV-01-01

cnag

Mònica Bayés Strategy Coordinator Centro Nacional de Análisis Genómico





01 EASIGEN-DS

Coordinator: CNAG (Ivo Gut)

Overall Objective: To develop an excellent technology, scientific an operational design for a new distributed research infrastructure on Advanced Genomics Technologies

Timeline: 2025-2028

Partners: 17, from 8 EU countries

Funds: 2,999,266 €

Website: https://easigen.eu/

Social media:





Bluesky







DISTRIBUTED EUROPEAN INFRASTRUCTURE WITH ALL TOOLBOX OF ADVANCED GENOMICS TECHNHOLOGIES

- HIGH THROUGHPUT SEQUENCING
- LONG READ SEQUENCING
- MULTIOMICS PROFILING (genome, transcriptome, epigenome, proteome)
 - SINGLE-CELL
 - SPATIAL

- FUNCTIONAL VARIANT VALIDATION
- ADVANCED DATA ANALYSIS:
 - OMICS DATA INTEGRATION
 - CLINICAL DATA INTERPRETATION
- FUTURE TECHNOLOGIES?





cnag



04 HISTORY OF THE CONSORTIUM'S PROJECTS

Advanced Community with high degree of coordination and networking

Transnational Access (TNA) provision

• ESGI (2011-2015)

- EASI-GENOMICS (NOT granted, 2017)
- EASI-GENOMICS (2019-2023, Coordination: CNAG, Dr Ivo Gut)

Implementation

З

Site construction and deployment of organization and legal entity recruitment IPR & innovation polices operation and upgrade plan, secure funding for operation.

Frontier research results, services to scientific community outreach, continuous upgrade of instrumentation and methods, political and financial support for long-term operation.

Preparation

Preparatory Phase business & construction plan, political and financial support secured, data policy & data management, cost book plan entity identification.

5

Operation

Design

Design study, business case, political and financial support obtained common acces policy, top-level breakdown of costs, governance and HR policy.

Concept development

Concept screening consortium formation access policy and funding concept scientific and project leadership.

2

- EASIGEN-DS (NOT granted, 2022)
- EASIGEN-DS (2025-2028)

Termination

E.g. dissolution, dismantling of facilities and resurrection of site, reuse, merger of operation and organisation or major upgrade

05 EASIGEN-DS: 2022 Proposal, Not Selected for Funding



centre nacional d'anàlisi genòmica centro nacional de análisis genómico

EXCELLENCE 3.5

...substantial overlap with previous networks...

...does not demonstrate sufficiently going beyond the state of the art with the technologies established by the network partners. ...objectives of the (post-design-study) EASIGEN project do not represent a major upgrade from previously funded project. ...support by EASIGEN(-DS) to new technologies is not convincingly demonstrated.

IMPACT 4

...achievement targets are not sufficiently specified.

QUALITY AND EFFICIENCY OF THE IMPLEMENTATION 3.5

...specific description of the role of each participating organisation in the project is not sufficiently provided.

...does not include some important expertise and access to critical infrastructure that could cast doubt over the feasibility of achieving corresponding aims of inclusivity of relevant communities. This is only partly mitigated by stakeholders' fora.

Combination of numerous deliverables, with late timeline of milestones is not convincing regarding sound implementation.

The critical point of long-term financing for costly services has not been addressed specifically enough

OVERALL 11

EASIGEN-DS proposes a new research infrastructure that addresses a clear current need in a high-impact, high-profit and internationally highly competitive area of services and research, but that is in many aspects incremental to previous efforts.

The results of this proposal might well provide the basis for a successful full EASIGEN RI proposal submission to suitable future calls, as long as the indicated shortcomings are addressed.



06 EASIGEN-DS: 2024 Proposal, SUCCESS!

	2022	2024
EXCELLENCE	3.5	4.5
IMPACT	4	4.5
QUALITY AND EFFICIENCY OF THE IMPLEMENTATION	3.5	5
TOTAL	11	14

What We Changed?



07 THE CONSORTIUM

+11

+2

+4

World-leading facilities in the field of genomics, with all the toolbox of cutting-edge genomic technologies CNAG, CAU, CEA-CNRGH/FG, KTH, KULeuven, UKSH, Charité, DKFZ, MDC, SU, UU

Genomic facilities from widening countries, with specific expertise RBI, UTartu

Partners with specific expertise that is crucial for the design of a new European RI

CSIL (Impact assessment) FhG-ISI (innovation) CRG (data management and open science)

UT3 (ethical and societal aspects)





08 THE OBJECTIVES

EASIGEN-DS (Project)

EASIGEN-DS 01. To develop an excellent technology and scientific design

EASIGEN-DS 02. To design a robust and efficient operational framework

EASIGEN-DS 03. To foster the engagement of relevant stakeholders and the research communities involved

EASIGEN 01. Become a world-leading research infrastructure in genomics

EASIGEN 02. Strengthen the European Research Area

EASIGEN 03. Boost research in life sciences

EASIGEN 04. Foster innovation

EASIGEN (Research infrastructure)

EASIGEN-DS CNC

centre nacional d'anàlisi genòmica centro nacional de análisis genómico

Project outcomes	ESGI	EASI-Genomics
PROJECT	European Sequencing and Genotyping Infrastructure	European Advanced infraStructure for Innovative Genomics
Timeline	February 2011-July 2015	February 2019-June 2023
Funds	FP7-INFRA-2010-1.1.13	H2020-INFRAIA-01-2018-2019
Budget	13,424,366.66 €	9,991.267 €
Coordination	Max Planck Society	Fundació Centre de Regulació Genòmica (CRG-CNAG)
Participants	MPG, GRL, CEA-CNRGH, UU, CAU, EMBL, GABO:MI, CRG- CNAG, MUG, INSERM	CRG, CEA-CNRGH, CAU, MDC, KULeuven, SU, UU, KTH, DKFZ, INSERM, MUG, EMBL, UTartu, Charité, LGC, QIAGEN
Transnational open calls	3	5
Transnational selected projects	29	170
New methodologies developed	8	8
Work shops	6	3
Interactions with EU initiatives	EGA, BBMRI	B1MG, EGA, ELIXIR, BBMRI-ERIC, EATRIS- ERIC, CORBEL, SPIDIA4P, PHINDAccess, LifeTime, EPIC-XS
Number of samples processed	Not assessed	18,095
Amount of data produced (Tb)	>4	187

cnag

centre nacional d'anàlisi genòmica centro nacional de análisis genómico



09 PREVIOUS RESULTS



10 RESOURCES AND CAPACITY

	CNAG	KTH /SU	Charite /MDC	UKSH /CAU	CEA	UTartu	KU Leuven	DKFZ	RBI	UU	TOTAL
N different users	247	228	175	199	55	56	155	270	3	176	1564
N different industry users	5	2	5	2	1	17	20	0	0	1	53
N transnational users	22	7	8	29	10	23	21	6	0	27	153
N Tb produced	454	1159	420	677	759	17	800	854	<1	480	5620
N NovaSeq6000/NovaSeq X	3	2	2	2	5	0	4	5	0	2	25
N Pac Bio instruments	1	0	2	1	2	0	1	0	0	2	9
N large-scale ONT instrum	2	1	1	0	2	0	1	1	0	1	9



Gaps and Hurdles	EASIGEN Solutions
Latest technologies not available at local, small or medium size genomics facilities.	EASIGEN facilities will guarantee rapid access to emerging knowledge and technologies to the European research community.
Very few large-scale genomics facilities in Europe, capable of producing >20,000 Gb per day.	EASIGEN coordinated facilities will support the generation of the millions of human whole-genome sequences.
Challenges in cross-border large-scale genomics research.	EASIGEN will reduce the fragmentation at European, national and regional level.
High disparities in sequencing capacity and genomics research excellence and internationalization across Europe.	EASIGEN will support the creation of new genomics facilities or upgrading existing ones in low Research and Innovation performing countries.
Minority groups currently underrepresented in genomics research.	EASIGEN will provide guidelines, organise dissemination activities and allow to coordinate efforts to promote diversity in the genomics workforce.
Limited exploitation of R&D results in genomics by industrial players	EASIGEN will provide an open innovation platform with several business models.



13 INITIAL CONCEPT DESIGN



centre nacional d'anàlisi genòmica centro nacional de análisis genómico





14 PROJECT ACTIVITIES

centre nacional d'anàlisi genòmica centro nacional de análisis genómico

Capacity building activities

- Training plan
- Plan for technology exchange activities within the consortium.
- Plan to support widening countries in setting up genomics platforms. Training plan targeting other genomics facilities and users.

Proof of concept activities

- Training course on long read sequencing targeting clinicians
- On-line training materials for the community
- Internal Tips and Tricks Jamboree on spatial senomics spatial genomics
- Internal workshop on cloud computing systems for advanced genomic analysis
- Benchmarking program for long read sequencing
- Depositing data from projects into EGA and/or OpenEBench
- Environmental audit
- Plan for the development of a genomics facility at the RBI (Croatia)

15 PROJECT BUDGET



centre nacional d'anàlisi genòmica centro nacional de análisis genómico

WP1/ WP2 COORDINATION	692.585€
WP3 TECHNOLOGY PLATFORM	610.474 €
WP4 SUPPORT PLATFORM	765.724€
WP5 IMPACT ASSESSMENT	478.100€
WP6 IMPLEMENTATION PLAN	452.380€
TOTAL	2.999.266€

LUMP SUM PROJECT:

- All pm cost estimations are within the 20th and 80th percentile, according to the <u>dashboard for lump sum evaluations</u>
- Travel costs calculated following the EU guidelines for EASIGEN countries (<u>Commission Decisions C(2021)35 and C(2023) 4928 authorising the use of unit costs for travel</u>). An average unit cost of 815 € for a 2-day trip.
- A unit cost for consumables and internally invoiced goods and services has been defined and added to allow for some benchmarking experiments to be done, ie: long read sequencing or similar."

16 KEY TIPS



centre nacional d'anàlisi genòmica centro nacional de análisis genómico

- Get the right partners!
 - Scientific partners
 - Complementary expertise: communication, data management, ethics, etc.
- Excellence section:
 - Previous results
 - Gaps, needs and solutions
 - Initial RI concept design
- Implementation section:
 - Proof of concept activities
 - Capacity building activities
- Budget:
 - Be very transparent with the cost calculations
 - Use tools developed by the EC for calculations
- Take advantage of the national contact points (FECYT, MICIU, ISCIII))

Be ambitious!

17 THE FIRST 4 MONTHS



centre nacional d'anàlisi genòmica centro nacional de análisis genómico

cnaq

- Kick off meeting, 12-13 February
- Communication activities:
 - Website, social media
 - Engagement and dissemination plan
 - ESHG Conference, 24-27 May, Milano
 - CTLS meeting, 10-12 June, Brno
 - ESFRI Forum, 12 June, Kraków
- Series of internal brainstorming meetings: EASIGEN organization, technologies, support services, etc.
- Landscape analysis: genomic facilities, initiatives, user needs and gaps, etc.
- Proof of concept activities:
 - Course on Medical Genomics, 7-9 October, Leuven
 - Benchamarking long read sequencing technologies.





The #EASIGEN-DS project has officially kicked off! ... más



د 13 veces compartido € 50 · 2 comentarios · 13 veces compartido

18 THE ROADMAP



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
RI PHASES					D	ESIGN													
										PRE	PARATO	RY					 		
												Ш	MPLEME	NTATIO	V		 		
																OF	PERATIO	N	
ESFRI							Applie	cation	Decis	ssion	ESF revie	RI N 1	ESI revie	FRI ew 2					
ROADMAP				2026 Roa	admap		2029 Ro	admap?	0?										
LEGAL							MoU 1			MoU 2			Legalfo	rm					
FUNDING	H202 EASI-	20 INFRA GENOM	AIA ICS		HE DE EAS	SIGN ST SIGEN-D	UDY S			FP10P	REPARA PHASE	FORY	EU STRU	FUNDIN	IG PROG / NATIO	RAMME	S? IDS?		
														ļ			1 1 1	į	
SERVICE PROVISION											10%			25%			100)%	

Thank you for your attention.





www.cnag.eu

nonica.bayes@cnag.eu