



As a **computational biologist** with extensive experience in **molecular oncology** and practical innovations ranging from **medical informatics** to **genomics** in the UK and France, I have played a key role in numerous international research initiatives, as well as provided advice to organisations globally. In my last academic role as the inaugural **Chief Data Officer** at *Institut Curie*, I was responsible for building advanced analytics and services to support the institutional mission of transforming the understanding and treatment of cancer. Designing and building a state-of-the-art data **Trusted Research Environment** to host heterogeneous data streams and linking that information to a patient longitudinal view to help clinicians improve quality of care for oncology patients. More recently, at *IQVIA Cancer Research*, I have been pursuing my goal of connecting technology and data expertise with renewed energy and focus. I am leading the technical design for DigiONE, the Digital Oncology Network for Europe with an **open innovation** agenda, creating a community of research dedicated to advance research in precision medicine and improve cancer care in Europe.

RECENT RELEVANT PROJECTS

- **DigiONE I3** (*European Regional and Development Fund*) – Federated digital RWE network that links routine clinical care with molecular diagnostics information [€8.6M]
- **Oncolab** (*Banque Publique d'Investissement, BPI*) – Standardising and improving access to health care data for cancer research through a secure platform [€10M]
- **PEVO^{data}** (*ERA PerMed*) – Integration of molecular and clinical profiles from a clinical basket trial and development of treatment decision tools [€1.6M]
- **PRECISION-PREDICT** (*Banque Publique d'Investissement, BPI*) – Multi-dimensional model development to reveal new biomarkers to improve lung cancer treatment [€300,000]
- **Substra** (*Banque Publique d'Investissement, BPI*) – A distributed and traceable machine learning infrastructure to develop clinical diagnostic support tools [€10M]
- **BigMedilytics** (*Horizon 2020, EC*) – In the context of this data-driven Big Data Public-Private innovation partnership we are working with IBM using imaging analyses for monitoring neoadjuvant chemotherapy in breast cancer [€15M]
- **ITFoC** (*FLAG-ERA*) – Digital medicine demonstrator federating breast cancer anonymised datasets to develop a virtual patient modelling platform [€1.5M].

RELEVANT INVOLVEMENT AS EXPERT

Consulting as a data expert for the **OECI's** Capacity building in Comprehensive Cancer Infrastructures programme (€10m initiative funded by **HaDEA**) auditing cancer institutes across Europe

Expert for the **European Research Executive Agency**, and advisor on countless review boards, some recent examples: *Virchow 2.0 cell-based medicine innovation cluster* (an initiative of the **German Ministry of Research, BMBF**), the *CaixaImpulse* acceleration programme from **La Caixa Foundation**, or **Genome Canada's Bioinformatics and Computational Biology Competition**

Successfully negotiated and contributed to the establishment of **DIGICORE** a major Public-Private Partnership between **Illumina, IQVIA** and 38 hospitals across 18 countries, being subsequently elected Board Member and Treasurer (from April 2021 until October 2022)

Member of the External Advisory Board of the **Trinity St James's Cancer Institute** (Dublin)

Member of the Scientific Advisory Board of **Qureight Ltd.** (Cambridge)

Editor of the **Nucleic Acid Research online Molecular Biology Database Collection** since 2011.

A FEW SELECTED PROFESSIONAL ACHIEVEMENTS

IQVIA, UK

From October 2022

Open Innovation Solutions Lead for Precision Oncology

- Leading with vision, driving innovation, and building a high-performing team to accelerate our ambitious program through continuous improvement.
- Driving health and life sciences innovation by building a cutting-edge data ecosystem. Collaborate with research leaders and established SMEs to identify key opportunities.
- Defining and leading strategy to quantify the impact of early adopter digital services, future-proofing them for advanced analytics. Creating technology roadmaps for smarter networks, driving improved care quality and wider clinical research participation.
- Leading the technical design of the DigiONE network to maximise the utilisation and extraction of knowledge from the data generated within the consortium
- Broad understanding of national and EU funding streams and significant experience establishing partnerships with start-ups and blue-chip companies in pharma and IT industries
- Compelling communicator with proven ability to interpret and translate complex and sensitive issues to a wide range of audiences.

Institut Curie, Paris, France

June 2017 - September 2022

Chief Data Officer

- Created a brand-new world-class department establishing a stimulating and rewarding environment
- Accountable to the Board for leading the enterprise-wide digital transformation by implementing changes in organisation, governance and culture, ensuring financial sustainability
- Provided overall strategic leadership and management to a highly qualified workforce by fostering a lean yet challenging environment through coaching and building effective links with other departments and units
- Directed the development of a €10m innovation project to expand legacy IT and provision of novel digital infrastructures to accelerate scientific discovery
- Using data science, deep learning, computational genomics and translational bioinformatics approaches to enable research discoveries and practical innovations in oncology
- Advising on the design of IT services that support core computational biology and computer science facilities to maximise the utilisation and extraction of knowledge from the data generated and relevant to the Institute
- Building and developing influential relationships with key stakeholders, customers and partners, positively influencing policy and practice at all levels (e.g. European Master Plan against cancer)
- Delivering expert, impartial advice to government officials.

Life Technologies – Thermo Fisher Scientific, UK

Jan 2013 - May 2017

Market Development – Genomics and Bioinformatics

- Delivered innovative bioinformatics services covering a broad range of applications within pharma, academia and international bodies across the EMEA region.

IT

Advanced knowledge of different computing architectures (including cloud and on-premise HPC solutions). I'm currently leading the technical blueprint for privacy-by-design digital infrastructure federating standardised routine electronic health records with molecular profiles across a network of 18 as interoperable nodes. During my tenure as **CDO** in Paris, I fostered a digital transformation agenda leveraging a new industrial infrastructure processing petabytes of genomic, medical imaging and clinical data, At the time, adopted DevOps software-engineering practices and successfully implemented a continuous delivery paradigm across operations to automate deployment in an Agile, sprint-based mode.

SELECTED PUBLICATIONS

From a total of 50+ peer reviewed publications (ORCID ID: 0000-0001-7139-6215) with 12,000+ citations (h-index: 33), some key publications are:

Mahon P, I Chatzitheofilou, A Dekker, XM Fernández, *et al.* **A Federated Learning System for Precision Oncology in Europe: DigiONE.** *Nature Medicine* 2024:29(1)

Tsopra R, XM Fernández, *et al.* **A Framework for Validating AI in Precision Medicine.** *BMC Medical Informatics and Decision Making* 2021:21 274

Rajewsky N, G Almouzni, SA Gorski, S Aerts, I Amit, MG Bertero, C Bock, AL Bredenoord, G Cavalli, S Chiocca, H Clevers, B De Strooper, A Eggert, J Ellenberg, XM Fernández, *et al.* **LifeTime and Improving European Healthcare through Cell-based Interceptive Medicine.** *Nature* 2020:587 377

Fernández XM. **Untangling Data in Precision Oncology – A Model for Chronic Diseases?** *IMIA Yearbook of Medical Informatics* 2020:29(1) 203

Diebolt V, I Azancot, FH Boissel, I Adenot, C Balagué, P Barthélémy, N Boubenna, H Coulonjou, XM Fernández, *et al.* **Artificial intelligence: Which Services, Which Applications, Which Results and Which Development Today in Clinical Research? Which Impact on the Quality of Care? Which Recommendations?** *Thérapie* 2019:74(1) 155.

SOME RECENT BOOK CHAPTERS

"**Leveraging Complexity in Oncology – A Data Narrative**" Xosé M Fernández. "Complexity 1" Ed. J-P Briffaut. *Wiley-ISTE* (2023) ISBN: 978-1-784059316

"**Harnessing the Complexity of Data in Precision Oncology**" Xosé M Fernández. "Systems Medicine: Integrative, Qualitative and Computational Approaches" Vol. 2 Ed. O Wolkenhauer *Elsevier* (2021) ISBN: 978-0-12-816078-7.

PROFESSIONAL MEMBERSHIP & SOCIETIES

Member of the:

- *French Medical Informatics Association* (AIM is the national node of IMIA)
- *European Society of Medical Oncology* (ESMO).
- *International Society for Computational Biology* (ISCB)
- *Spanish Society of Molecular Biology* (SEBBM is a FEBBS founding society)