

PERSONAL
INFORMATION

Alice Usai

Nationality Italian

WORK EXPERIENCE

- 01/04/2023–30/09/2023 **Postdoctoral fellowship 2023 Veronesi Foundation** – Department of Biology, University of Pisa (Italy)
Research project: “Zebrafish patient avatar of pancreatic ductal adenocarcinoma as high-throughput tool to identify clinically relevant effective chemotherapy” Tutor: Prof. Vittoria Raffa
- 01/06/2021–31/03/2023 **Postdoctoral fellowship** – Department of Biology, University of Pisa (Italy)
Research project: “PANOMIC - Personalized medicine of pancreatic cancer using genomics and avatars”
- 01/01/2021–31/05/2021 **Research fellowship** - Department of Biology, University of Pisa (Italy)
Research project: “zebrafish Patient Derived Xenograft (PDX) models” Tutor: Prof. Vittoria Raffa
- 15/09/2020-21/12/2020 **Visiting Ph.D. student** - National Institute for Cellular Biotechnology - Dublin City University (Ireland)
Research project: “Patient-derived organoids of pancreatic cancer to test drug response”
Tutor: Prof. Naomi Walsh
- 01/07/2017–31/10/2017 **Research fellowship** - Department of Biology, University of Pisa (Italy)
Improving “Zebrafish Avatar” xenograft model using piece of human solid tumor.

EDUCATION AND
TRAINING

- 01/11/2017–31/03/2021 **Ph.D. in Biology** - University of Pisa (Italy) *cum laude*
Research project: “Xenotransplantation of solid tumours in zebrafish embryos: towards personalised medicine”
Tutor: Prof. Vittoria Raffa
- 01/10/2013–16/12/2016 **Master degree in Biology Applied in Biomedicine** - University of Pisa (Italy) 110/110
Thesis title: “Localization and target delivery of neurotrophic factors in a model of retinal degeneration”
Supervisors: Prof. Vittoria Raffa, Prof. Luciana Dente, Dr. Martina Giannaccini
- 01/10/2007–02/05/2013 **Bachelor in Molecular Biology** - University of Pisa (Italy) 101/110
Thesis title: “Evaluation of the expression of apoptosis-promoting factor in a murine melanoma using Western Blot” Supervisor: Prof. Massimo Dal Monte

PUBLICATIONS

- Usai A**, Di Franco G, Gabellini C, Morelli L, Raffa V
“Establishment of Zebrafish Patient-derived Xenografts from Pancreatic Cancer for Chemosensitivity Testing”
J. Vis. Exp. (195), e63744, doi:10.3791/63744 (2023).
- Noorani S, Nelson S.R, Conlon N.T, Meiller J, Shcheglova E, **Usai A**, Stoof J, Palanga L, O'Neill F, Roche S, Cotter M.B, Swan N, Walsh, N.
“Pancreatic Cancer 3D Cell Line Organoids (CLOs) maintain the phenotypic characteristics of organoids and accurately reflect the cellular architecture and heterogeneity in vivo.”
Organoids 2022, 1, 168-183. doi.org/10.3390/organoids1020013
- Di Franco G, **Usai A**, Piccardi M, Cateni P, Palmeri M, Pollina LE, Gaeta R, Marmorino F, Cremolini C, Dente L, Massolo A, Raffa V, Morelli L.
“Zebrafish Patient-Derived Xenograft Model to Predict Treatment Outcomes of Colorectal Cancer Patients.”
Biomedicines. 2022 Jun 22;10(7):1474. doi:10.3390/biomedicines10071474. PMID: 35884780; PMCID: PMC9313122.
- Miserocchi G, Spadazzi C, Calpona S, De Rosa F, **Usai A**, De Vita A, Liverani C, Cocchi C, Vanni S, Calabrese C, Bassi M, De Luca G, Meccariello G, Ibrahim T, Schiavone M, Mercatali L.
“Precision Medicine in Head and Neck Cancers: Genomic and Preclinical Approaches”
Journal of Personalized Medicine. 2022; 12(6):854. https://doi.org/10.3390/jpm12060854
- Corsinovi D, **Usai A**, De Sarlo M, Giannaccini M, Ori M
“Zebrafish avatar to develop precision breast cancer therapies”
Anticancer Agents Med Chem.; 2021 Apr 1. doi: 10.2174/1871520621666210402111634.
- d'Amora M, Colucci P, **Usai A**, Landi E, Deleye L, Dente L, De Angelis F, Raffa V, Tantussi F
“Heat-sensitive polyacrylamide nanoparticle for cancer treatment”
Precis. Nanomed., 2020 Dec; 3(5):666-676 doi.org/10.33218/001c.17629
- Di Franco G, **Usai A**, Funel N, Palmeri M, Montesanti IER, Matteo Bianchini M, Gianardi D, Furbetta N, Guadagni S, Vasile E, Falcone A, Pollina LE, Raffa V, Morelli L
“The use of zebrafish embryos as avatar of patients with pancreatic cancer: a new xenotransplantation model towards personalized medicine”
World J Gastroenterol., 2020 Jun 7; 26(21): 2792-2809 doi: 10.3748/wjg.v26.i21.2792

Usai A, Di Franco G, Colucci P, Pollina L E, Vasile E, Funel N, Palmeri M, Dente L, Falcone A, Morelli L, Raffa V
"A model of Zebrafish Avatar for co-clinical trials"
 Cancers (Basel). 2020 Mar 13;12(3). pii: E677. doi: 10.3390/cancers12030677.

Giannaccini M, **Usai A**, Chiellini F, Guadagni V, Andreazzoli M, Ori M, Pasqualetti M, Dente L, Raffa V
"Neurotrophin-conjugated nanoparticles prevent retina damage induced by oxidative stress"
 Cell Mol Life Sci. 2018 Apr;75(7):1255-1267.

CONFERENCE PROCEEDINGS

A Usai, G Di Franco, L Morelli, V Raffa
Zebrafish patient-derived xenografts as preclinical model to predict individual response to cancer therapy
 Poster - Animal Models of Cancer Conference, 18-21 July 2023 Lisbon, Portugal

A Usai, M Piccardi, P Cateni, G Di Franco, L Morelli, V Raffa
Zebrafish patient avatars in precision cancer therapy
 Oral presentation - Webinar Italian Zebrafish 2021-2022

A Usai, I E R Montesanti, G Di Franco, N Funel, L E Pollina, E Vasile, L Morelli, V Raffa
Patient-derived tumor xenografts: proliferation, invasiveness and predictiveness
 Poster - Zebrafish 2020 Virtual Meeting, held online 26th -27th October 2020

A Usai, P Colucci, G Di Franco, E Vasile, L E Pollina, L Morelli, V Raffa
Zebrafish Avatar: a preclinical model for precision medicine
 Poster - 4th Zebrafish for Personalized/Precision Medicine Conference. Sept. 18-20, 2019 Toronto, Canada

A. Usai, P. Colucci, R. Savini, G. Di Franco, E. Vasile, L. E. Pollina, L. Morelli, V. Raffa
Zebrafish Avatar: development of a preclinical model for precision medicine
 Poster - 2nd Italian Zebrafish Meeting. January 30th - February 1st, 2019 Pisa, Italy

A Usai, G Di Franco, E Vasile, Luca E Pollina, L Morelli, V Raffa
Xenotransplantation of solid tumours in zebrafish embryos: towards personalised medicine
 Poster - 2nd International FishMed Conference on Zebrafish Research. March 25–27 2018 Warsaw, Poland

COLLABORATIONS IN RESEARCH PROJECTS

2022 Identification and characterization of deregulated genes in malignant pleural mesothelioma - financed by AIRC IG 2018-project Id 21853. PI: Prof. Stefano Landi

2021 Personalized medicine of pancreatic cancer using genomics and avatars - financed by Fondazione Pisa. PI: Prof. Luca Morelli

2017 Xenotransplantation of primary cancer samples in zebrafish embryos: towards personalized – financed by Fondazione Pisa. PI: Prof. Luca Morelli

2016 Cell-specific drug delivery of drugs and molecules in the retina: new approaches of targeted therapy - financed by Ministry of Education, University and Research (MIUR). PI: Prof. Vittoria Raffa

AWARD and RECOGNITION

Post-doctoral Fellowships research grant Fondazione Veronesi Year 2023

Early career researcher travel grant to attend the first plenary meeting of the COST Action CA21116 held at DKFZ in Heidelberg, Germany on 13-14 April 2023

Early career researcher grant for a poster presentation at "Animal Models of Cancer Conference" held in Lisbon, Portugal on 18-21 July 2023

Trieste Next academy travel fund – Scientific research festival, Trieste 28-30 September 2018

PERSONAL SKILLS

Mother tongue Italian
 Foreign language English

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
C1	C1	B2	B2	C1
English for Academic Purposes (C1+), University of Pisa English Upper-Intermediate level certificate, Windsor English Language Centre B2 English level certificate, University of Pisa				

Digital skills Knowledge of:

- **GraphPad Prism** to analyze, graph and present scientific data
- **ImageJ** for manipulation of scientific digital images

Scientific skills **Molecular biology:** Bacterial transformation, plasmid DNA extraction, gel electrophoresis. Production of antisense-RNA probes and in situ hybridization. TUNEL assay. Western Blot.

Cell biology: Organoid culture method (PDM-37, PDM-41, PDM-106 and primary patient-derived). Cell lines culture (SkBr3, NIH/3T3, B16-F10, HCT 116, Caco-2, MIA-PaCa, A375). In vitro culture of primary cancer cells. CM-Dil and CM-DiO staining procedures.

Animal model: Experience with the zebrafish animal model: regular care, breeding and housing. Xenotransplantation of tissues and cancer cells: proliferation, migration and angiogenesis analysis. Intravitreal microinjections. Toxicity and efficacy testing of chemotherapeutic drugs.

Histology: OCT embedding and cryosectioning tissue and organoid. Paraffin embedding and microtome sectioning. Histological stains. Image acquisition by optical and confocal microscopy.

Nanomedicine: Functionalization and characterization of nanoparticles. Nanoparticles microinjection for drug delivery.

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