

UNIVERSITY OF MILAN

Selection procedure for recruiting associate professors under art.18, paragraph 1 and 4, of Law No.240/2010 for competition sector 05/E2 - Biologia Molecolare, (scientific-disciplinary sector BIO/11 - Biologia Molecolare) at the Department of Biotecnologie Mediche e Medicina Traslazionale,(announcement published in Official Gazette No. IV serie speciale Concorsi ed Esami, Competition code 5459)

Felice Alessio Bava
CURRICULUM VITAE

PERSONAL DATA

SURNAME	BAVA
NAME	FELICE ALESSIO
DATE OF BIRTH	13/04/1983

Nationality: Italian

Languages: Italian (mother tongue), English (fluent), Spanish (fluent), French (basic knowledge)

Linkedin profile: <https://www.linkedin.com/in/felice-alessio-bava-96747684/>

IN A NUTSHELL

Molecular Biologist, expert in RNA-biology and technology-development (*in situ* sequencing, highly multiplexed imaging, multiplexed ion-beam imaging, mass-cytometry, single-cell sequencing) applied to cancer biology and immunology. Prolific inventor.

QUALIFICATIONS

DEGREES

- 2023** **Italian license to participate to selections as Associate Professor in Molecular Biology**
- Abilitazione Scientifica Nazionale - Professore di II Fascia in Biologia Molecolare
- Italian license to participate to selections as Associate Professor in Genetics** -
Abilitazione Scientifica Nazionale - Professore di II Fascia in Genetica
- Italian license to participate to selections as Associate Professor in Applied Biology** -
Abilitazione Scientifica Nazionale - Professore di II Fascia in Biologia Applicata
- 2008-2012** **Doctor of Philosophy in Biomedicine**
Degree: "*cum laude*"
Gene Regulation Department, Center for Genomic Regulation and Pompeu Fabra University, Barcelona, Spain
- 2007** **Biologist Italian License - Abilitazione Biologo (Italia)**

- 2004-2006** **Master's degree in Medical Biotechnology**
Degree: "*cum laude*"
Medicine and Surgery Department, La Sapienza University, Rome, Italy
- 2001-2004** **Bachelor's degree in Biotechnology**
Degree: "*cum laude*"
Mathematics, Physics and Natural Sciences Department, Tor Vergata University, Rome, Italy

TEACHING ACTIVITIES

INSERM- France

As a Principal Investigator at the Institut Curie and INSERM CRCN, I led a research lab, mentoring these students:

- 1) 3 postdocs
- 2) 1 PhD student
- 3) 2 technicians

I thought multiple courses about:

- 1) Single cell technologies (Institut Curie, University of Paris Saclay, INSERM)
- 2) Highly multiplexed imaging (Institut Curie, University of Paris Saclay, INSERM)

10x Genomics

I led the transition of 10x Genomics from single-cell sequencing (Chromium Product) to in-situ sequencing (Xenium Product). As an expert of in situ sequencing (I am listed as last and corresponding author of the 2018 Science publication, which is one of the pioneering publications of the field), I led the first 10x Genomics team in this field. We started as a team of 5 scientists and later became a team of around a hundred scientists, listed on the 2023 Nature Communications publication. To this end, reporting directly to the Chief Technology Officer, I mentored dozens of scientists, including the current leadership of 10x Genomics. In addition to 1-1 mentoring, I held multiple seminars to different groups of scientists. Teaching modalities varied depending on the audience. I gave classes mostly to experimentalists with molecular biology and biochemistry backgrounds, engineers (mostly mechanical and optical engineers), computer scientists (mostly bioinformaticians). I also held a company-wide course on "in-situ spatial technologies".

Stanford University

As a Senior Scientist (Faculty position at Stanford) and Post-doctoral fellow, I trained:

- 1) 2 PhD students
- 2) 1 summer student

As a Postdoctoral fellow, I participated as a Teacher in 2 courses on "Mass-Cytometry", annually held by the Nolan Lab.

CRG and IRB barcelona:

As a Postdoctoral fellow and as a PhD Student I mentored 2 PhD students (Giangarra et al 2015, Calderone et al 2016)

SCIENTIFIC RESEARCH ACTIVITIES

POSITIONS HELD

2018 - present*

INSERM- Chargé de recherche de classe normale (level: Associate Professor at the French National Institute of Health)
Paris-Orsay, **France**
*Currently on leave

2019 - 2022

Senior Staff Scientist, **10x Genomics** (CA, **USA**)
Reported to: Michael Schnall-Levin (Chief Technology Officer)

- *Initiated the set-up of **in situ transcriptomics** at 10x Genomics: led the first **in situ Advanced-Technology-Project** of 10x Genomics (previously exclusively dedicated to NGS-based single-cell sequencing), which then transitioned into the **Product-Development-Project** of the **Xenium** product <https://www.10xgenomics.com/platforms/xenium>*
- *Provided mentorship and support to the scientific leadership of the Xenium project*
- *Worked with the strategy group, to provide technical inputs and inform strategic decisions such as the acquisition of Cartana and ReadCoor by 10x Genomics*
- *Worked with the engineering group to provide technical inputs and inform decisions on the Xenium Instrument architecture*
- *Contributed to the development of the **in situ** infrastructure*
- *Worked with the Intellectual Property team - filed ideas for >50 provisional patent applications/converted PCTs/published patents <https://patents.google.com/?inventor=felice+alessio+bava>*
- *Supported the leads of all the ongoing **in situ** Projects*
- *Contributed to the initial development of the **Visium** and **CytAssist** products (spatial transcriptomics)*
- *Contributed to hiring members of the R&D team*

2018 - 2019

Principal Investigator (level: Associate Professor)
Gene regulation of the immune response to cancer Laboratory
Genotoxic stress and cancer Unit, **Institut Curie**,
INSERM-tenured Researcher CR1 (French National Institute of Health)
Paris-Orsay, **France**

- *Set up and managed a research lab and led a research group (7 researchers)*
- *Conceived and directed multiple scientific projects in the field of cancer immunology*
- *Set up **in situ** sequencing and multiplexed proteins-detection technologies*
- *Secured research funds for ~ 2 million Euros (grants details at the bottom)*

2017 - 2018

Senior Research Scientist, **Prof. Garry Nolan** (collaboration with **Prof. Karl Deisseroth**)
Microbiology and Immunology- Baxter lab, **Stanford University**, CA, **USA**

- *Set the ground for multiple projects in the field of cancer immunology.*

- Co-developed a technology for high resolution imaging of molecules and drugs by secondary ion beam imaging (HD-MIBI).
- Co-developed a method for multiplexed in situ sequencing (STARmap)

2014 - 2017

HFSP Long-Term Post-doctoral Research Fellow, [Prof. Garry Nolan](#)

Microbiology and Immunology- Baxter lab, [Stanford University](#), CA, [USA](#)

- Co-developed a method for single-cell, highly multiplexed, RNA and proteins detection by mass cytometry (PLAYR)
- Co-developed a method for highly multiplexed RNA and proteins detection in single cells by split-pool synthesis, in collaboration with Roche Sequencing Solutions.

2012 - 2013

Postdoctoral Research Fellow, [Dr. Raul Mendez](#)

- Molecular medicine, [Institute for Research in Biomedicine](#), Barcelona, [Spain](#)
- Studied the role of CPEB-family of proteins in mRNA translation during the mitotic cell cycle.

2008 - 2012

PhD Graduate Fellow, [Dr. Raul Mendez](#)

Gene Regulation Department, [Center for Genomic Regulation and Pompeu Fabra University](#), Barcelona, [Spain](#)

- Described a new mechanism of alternative pre-mRNA processing

2007 - 2008

Scientist, Genoma Molecular Lab, Rome, [Italy](#) (Currently [EUROFINS Genoma](#))

Reporting to: [Anil Biricik \(current Chief Scientific Officer\)](#)

- Single-cell sequencing for pre-implantation genetic diagnosis

2006 - 2007

Scientist, [Mendel Institute](#), Rome, [Italy](#)

- Sequencing approaches for analysis of genetic disorders

SCIENTIFIC PUBLICATIONS

ORIGINAL RESEARCH ARTICLES

Amanda Janesick, Robert Shelansky, Andrew D. Gottscho, Florian Wagner, Stephen R. Williams, Morgane Rouault, Ghezal Beliakoff, Carolyn A. Morrison, Michelli F. Oliveira, Jordan T. Sicherman, Andrew Kohlway, Jawad Abousoud, Tingsheng Yu Drennon, Seayar H. Mohabbat, **10x Development Teams*** & Sarah E. B. Taylor

High resolution mapping of the tumor microenvironment using integrated single-cell, spatial and in situ analysis

Nat. Commun. 2023 Dec 19;14(1):8353. doi: 10.1038/s41467-023-43458-x.

Jolanda Sarno, Pablo Domizi, Yuxuan Liu, Milton Merchant, Christina Pedersen, Dorra Jedoui, Astraea Jager, Garry Nolan, Giuseppe Gaipa, Sean Bendall, **Bava FA**, and Kara Davis.

Dasatinib Overcomes Glucocorticoid Resistance in B-cell Acute Lymphoblastic Leukemia

Nat. Commun. 2023 May 22;14(1):2935. doi: 10.1038/s41467-023-38456-y.

Rovira-Clavé X, Jiang S, Bai Y, Zhu B, Barlow G, Bhate S, Coskun AF, Han G, Ho CK, Hitzman C, Chen SY*, **Bava FA***, Nolan GP*.

Subcellular localization of biomolecules and drug distribution by high-definition ion beam imaging
Nat. Commun. 2021 Jul 30;12(1):4628. doi: 10.1038/s41467-021-24822-1.

* co-last author

O'Huallachain M, Bava FA, Shen M, Dallett C, Paladugu S, Samusik N, Yu S, Hussein R, Hillman GR, Higgins S, Lou M, Trejo A, Qin L, Tai YC, Kinoshita SM, Jager A, Lashkari D, Goltsev Y, Ozturk S, Nolan GP.

Ultra-High Throughput Single Cell Analysis of Proteins and RNAs by Split-pool Synthesis
Commun. Biol. 2020 May 29;3(1):279. doi: 10.1038/s42003-020-1019-9.

Wang X, Allen WE, Wright MA, Sylwestrak EL, Samusik N, Vesuna S, Evans K, Liu C, Ramakrishnan C, Liu J, Nolan GP, Bava FA*, Deisseroth K*.

Three-dimensional intact-tissue sequencing of single-cell transcriptional states

Science 2018 Jul;27:361(6400). - **Featured F1000prime**

* co-last, co-corresponding author

Bhattacharya S, Li J, Sockell A, Kan MJ, Bava FA, Chen SC, Ávila-Arcos MC, Ji X, Smith E, Asadi NB, Lachman RS, Lam HYK, Bustamante CD, Butte AJ, Nolan GP.

Whole-genome sequencing of Atacama skeleton shows novel mutations linked with dysplasia.

Genome Res. 2018 Apr;28(4):423-431. doi: 10.1101/gr.223693.117. Epub 2018 Mar 22.

Burns TJ, Frei AP, Gherardini PF, Bava FA, Batchelder J, Yoshiyasu Y, Yu J, Groziak A, Kimmey S, Gonzalez VE, Fantl W, Nolan GP.

High-throughput precision measurement of subcellular localization in single cells

Cytometry A 2018 91, 180-189.

Frei AP*, Bava FA*, Zunder ER, Hsieh EW, Chen SY, Nolan GP, Gherardini PF.

Highly multiplexed simultaneous detection of RNAs and proteins in single cells

Nat Methods 2016 13, 269-75. - **Featured F1000prime**

*co-first, equal contributors

Calderone V, Gallego J, Fernandez-Miranda G, Garcia-Pras E, Maillo C, Berzigotti A, Mejias M, Bava FA, Angulo-Urarte A, Graupera M, Navarro P, Bosch J, Fernandez M, Mendez R.

Sequential Functions of CPEB1 and CPEB4 Regulate Pathologic Expression of Vascular Endothelial Growth Factor and Angiogenesis in Chronic Liver Disease.

Gastroenterology. 2016 Apr;150(4):982-97.e30. doi: 10.1053/j.gastro.2015.11.038. Epub 2015 Nov 26.

Giangarrà V, Igea A, Castellazzi CL, Bava FA*, Mendez R*.

Global Analysis of CPEBs Reveals Sequential and Non-Redundant Functions in Mitotic Cell Cycle

PLoS One. 2015 Sep 23;10(9)

* co-last, co-corresponding author

Bava FA, Eliscovich C, Ferreira PG, Minana B, Ben-Dov C, Guigo' R, Valcarcel J, Mendez R

CPEB1 coordinates alternative 3'UTR formation with translational regulation

Nature 2013 Mar 7; 495(7439):121-5

Visco V, Bava FA, d'Alessandro F, Cavallini M, Ziparo V, Torrisi MR.

Human colon fibroblasts induce differentiation and proliferation of intestinal epithelial cells through the direct paracrine action of keratinocyte growth factor.

J Cell Physiol. 2009 Jul;220(1):204-13. doi: 10.1002/jcp.21752.

REVIEW ARTICLES

Weill L, Belloc E, Bava FA, Mendez R

Translational control by changes in poly(A) tail length: recycling mRNAs.

Nature Struct Mol Biol. 2012 Jun 5;19(6):577-85 - Cited by 179 - IF 13.3

ORGANIZATION, SUPERVISION AND COORDINATION OF NATIONAL AND INTERNATIONAL RESEARCH CENTRES OR GROUPS, OR PARTICIPATION IN THEM

GRANTED RESEARCH FUNDING

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role of the PI</i>
Single-cell analysis of the DNA-damage response in T-lymphocytes' reaction to cancer cells	ATIP-Avenir	€ 200.000	2019-2023	Principal Investigator <i>* declined</i>
T-lymphocyte exhaustion in the 3D tumor microenvironment	Human Frontier Science Program - CDA award	\$ 300.000	2020-2023	Principal Investigator
Targeting eIF4A in melanoma persistent cells to prevent resistance	Melanoma Research Alliance	\$ 893.000 (shared with 2 more groups - my group received ~\$ 400.000)	2019-2022	Young Investigator
In-situ transcriptomics system	INSERM and Institut Curie	€ 400.000	2019	Principal Investigator <i>* declined</i>
High-parameter single-cell analysis to study the DNA-damage response during immune reaction to cancer	Fondation pour la Recherche Medicale	€ 200.000	2018-2020	Principal Investigator
A technology platform to study the role of DNA-damage in T-lymphocytes exhaustion	DIM-ELICIT Region Ile de France	€120.000 (for one postdoc salary)	2018-2020	Principal Investigator

Highly-multiplexed single-cell analysis to identify new regulators of cancer-immune cells molecular cross-talk	Fondation Bristol-Myers Squibb pour la Recherche en Immuno-Oncologie	€ 75.000	2018-2020	Principal Investigator
--	--	----------	-----------	------------------------

SUPERVISION OF OR PARTICIPATION IN PUBLISHING COMMITTEES OF SCIENTIFIC MAGAZINES

2013-present Reviewer for the following scientific journals: Nature, Nature Biotechnology, Nature Methods

HOLDING PATENTS

More than 50 patent applications, converted PCTs and published patents

Below, some of the published ones to date. A real-time-updated full list can be found at the link below

<https://patents.google.com/?inventor=felice+alessio+bava>

id	title	inventor/author	publication date
EP-4015647-B1	Multiplexed single molecule rna visualization with a two-probe proximity ligation system	Nikolay Samusik, Felice-Alessio Bava, Yury Goltsev, Garry Nolan	2023-08-30
US-2022348992-A1	Methods for determining a location of a target nucleic acid in a biological sample	Marlon Stoeckius, James Michael Chell, Cedric Uyttingco, Jennifer Chew, Felice Alessio Bava	2022-11-03
US-11835462-B2	Methods and compositions for partitioning a biological sample	Felice Alessio Bava	2023-12-05
US-2023034216-A1	Multiplexed spatial capture of analytes	Felice Alessio Bava	2023-02-02
WO-2021142233-A1	Methods for determining a location of a target nucleic acid in a biological sample	Marlon STOECKIUS, James Michael CHELL, Cedric UYTINGCO, Felice Alessio BAVA, Jennifer Chew	2021-07-15
US-2022241780-A1	Imaging system hardware	Augusto Manuel Tentori, Rajiv Bharadwaj, Felice Alessio Bava	2022-08-04
EP-4107285-A1	Methods and compositions for integrated in situ spatial assay	Felice Alessio BAVA, Zachary Bent	2022-12-28
US-2021237022-A1	Capturing oligonucleotides in spatial transcriptomics	Felice Alessio Bava	2021-08-05

US-2023017 773-A1	Fluid delivery methods	Hanyoup Kim, Augusto Manuel Tentori, Siyuan Xing, Rajiv Bharadwaj, Bill Kengli Lin, Felice Alessio Bava, Pratomo Putra ALIMSIJAH, Nabil Mikhael	2023-01-19
US-2023194 469-A1	Electrophoresis cassettes and instrumentation	Augusto Manuel Tentori, Hanyoup Kim, Felice Alessio Bava, Rajiv Bharadwaj	2023-06-22
US-2021238 664-A1	Methods for preparing high-resolution spatial arrays	Felice Alessio Bava	2021-08-05
US-2021238 680-A1	Increasing capture efficiency of spatial assays	Felice Alessio Bava	2021-08-05
AU-2021343 507-A1	Sample handling apparatus and fluid delivery methods	Pratomo Putra ALIMSIJAH, Felice Alessio BAVA, Rajiv Bharadwaj, Hanyoup Kim, Bill Kengli LIN, Hendricus MARINDRA, Nabil Mikhael, Spontaneous Rose McKnight RUSSELL, Augusto Manuel TENTORI, Siyuan Xing	2023-04-06
ES-2946357- T3	Methods for spatial analysis using RNA template ligation	James Michael Chell, Marlon Stoeckius, Jonathan Alles, Caroline Julie Gallant, Christina Galonska, Felice Alessio Bava, Layla Katirae	2023-07-17
US-2021189 475-A1	Imaging system hardware	Augusto Manuel Tentori, Rajiv Bharadwaj, Felice Alessio Bava	2021-06-24
US-1173230 0-B2	Increasing efficiency of spatial analysis in a biological sample	Felice Alessio Bava	2023-08-22
US-2016108 458-A1	Multiplexed detection and quantification of nucleic acids in single-cells	Andreas Philipp Frei, Garry P. Nolan, Pier Federico Gherardini, Felice Alessio Bava	2016-04-21
AU-2021345 283-A1	Sample handling apparatus and image registration methods	Felice Alessio BAVA, Rajiv Bharadwaj, Erica GRAZIOSA, Hanyoup Kim, Augusto Manuel TENTORI, Cedric UYTINGCO, Siyuan Xing	2023-04-06
WO-202310 2118-A2	Methods, compositions, and systems for improved in situ detection of analytes and spatial analysis	David SUKOVICH, Felice Alessio BAVA, Augusto Manuel TENTORI, Hanyoup Kim, Amanda JANESICK	2023-06-08
US-2021238 662-A1	Probes and methods of using same	Felice Alessio Bava, Patrick J. MARKS	2021-08-05
US-2021388 424-A1	Methods for analyzing target nucleic acids and related compositions	Felice Alessio Bava	2021-12-16

US-2021277 460-A1	Three-dimensional spatial transcriptomics with sequencing readout	Felice Alessio Bava	2021-09-09
US-2023242 976-A1	Imaging system hardware	Augusto Manuel Tentori, Rajiv Bharadwaj, Felice Alessio Bava	2023-08-03
EP-4281585- A1	Methods and compositions for internally controlled in situ assays	Felice Alessio BAVA	2023-11-29
US-2022056 515-A1	Methods of identifying multiple epitopes in cells	Felice-Alessio Bava, Yury Goltsev, Garry P. Nolan, Maeve O'Huallachain, Nikolay Samusik	2022-02-24
US-2022186 300-A1	Methods and compositions for multimodal in situ analysis	Felice Alessio Bava	2022-06-16
US-2022136 049-A1	Sequence analysis using meta-stable nucleic acid molecules	Felice Alessio Bava, Eswar Prasad Ramachandran Iyer	2022-05-05
US-2021238 674-A1	Bi-directional in situ analysis	Felice Alessio Bava	2021-08-05
US-2021388 423-A1	Nucleic acid assays using click chemistry bioconjugation	Felice Alessio Bava, David M. Patterson, Meiliana Tjandra, Yi Luo	2021-12-16
US-2023324 421-A1	Systems with a gasket and methods for analyzing samples	Yiran Zhang, Felice Alessio Bava, Rhyann Blaine DOCKTER, Rajiv Bharadwaj	2023-10-12
US-1185170 0-B1	Methods, kits, and compositions for processing extracellular molecules	Felice Alessio Bava, Geoffrey McDermott	2023-12-26
US-2023416 808-A1	Methods, compositions, and systems for improved in situ detection of analytes and spatial analysis	David Sukovich, Felice Alessio Bava, Augusto Manuel Tentori, Hanyoung Kim, Amanda Janesick	2023-12-28
US-2023416 821-A1	Methods and compositions for probe detection and readout signal generation	Felice Alessio Bava, Marco Mignardi	2023-12-28
WO-202310 8139-A3	Multi-resolution in situ decoding	Felice Alessio BAVA, David Hoffman, Elijah ROBERTS	2023-07-20
US-2023037 182-A1	Circularizable probes for in situ analysis	Felice Alessio Bava, Jorge Iván HERNÁNDEZ NEUTA, Malte KÜHNEMUND, Jessica ÖSTLIN, Xiaoyan Qian, Toon VERHEYEN	2023-02-02
WO-202307 6528-A3	Methods for sample preparation	Felice Alessio BAVA	2023-06-01

US-2023287 478-A1	Concatemeric detectable probes and related methods	Felice Alessio Bava	2023-09-14
US-2023183 787-A1	Restriction digest based sequential decoding	Felice Alessio Bava, Toon VERHEYEN	2023-06-15
US-2023167 496-A1	Compositions and methods for isolating nucleic acid molecules	Felice Alessio Bava	2023-06-01
US-2022403 458-A1	Methods to generate circularizable probes in situ	Felice Alessio Bava	2022-12-22
US-2022282 316-A1	Methods and compositions for modifying primary probes in situ	Felice Alessio Bava	2022-09-08
US-2022282 306-A1	Sequential hybridization and quenching	Felice Alessio Bava	2022-09-08

NATIONAL AND INTERNATIONAL AWARDS AND ACCOLADES FOR RESEARCH ACTIVITY

FELLOWSHIPS AND AWARDS

- 2018** **Tenured Researcher position**, French National Institute of Health (INSERM), France

Tenured Researcher position, French National Research Council (CNRS), France - respectfully declined
- 2017** **United States employment-based Green Card for extraordinary abilities**
- 2014 - 2017** **Human Frontier Science Program Long-Term Postdoctoral Fellowship**
- 2013** **Exceptional Thesis Award**, Pompeu Fabra University, Spain
- 2008** **Face of the Year, European Union Award**, EU
- 2008 - 2012** **La Caixa international PhD Fellowship**, Center for Genomic Regulation and Pompeu Fabra University, Spain

SPEAKING AT CONFERENCES AND CONVENTIONS OF INTERNATIONAL INTEREST

2018

-Single-cell symposium - Institut Curie - co-organizer and Chair of the session “Spatial single-cell technologies” (international conference focused on single-cell and spatial technologies)

-Journées Scientifiques et Médicales (JSM) conference, Curie Institute, Paris, France (this is a conference hosted by Curie Institute, where I was invited to give a talk on single-cell technologies and their applications to biomedical research)

2013

-Garry Nolan Lab, Stanford University, Stanford, USA
-David Tollervey Lab, Wellcome Trust, Edinburgh, UK

- Angus Lamond Lab, Wellcome Trust, Dundee, UK
- Jeffrey Chao Lab, FMI, Basel, Switzerland
- Victor Ambros Lab, UMASS, Worcester, USA
- David Bartel Lab, MIT, Cambridge, USA
- Thomas Tuschl Lab, Rockefeller University, New York, USA
- Gianni Cesareni Lab, Tor Vergata University, Rome, Italy

2012

Barcelona Biomed Seminar, IRB, Barcelona, Spain

2011

- EMBO Conference Series on Protein Synthesis and Translational Control, EMBL ATC, Heidelberg, Germany
- Second International EURASNET Conference on Alternative Splicing, Granada, Spain

MANAGING, ORGANISATIONAL, AND SERVICE ACTIVITIES

2018-2019 Single-cell and multiplexed-imaging technologies advisor at Institut Curie, Paris-Orsay, France

Date

03/01/2024

Place

Rome