

Curriculum Vitae

Personal information

First name(s) / Surname(s) **Angela Maria Cusano**
Address(es) Via Laviano, 78 81100 Caserta ITALY
Telephone(s) Mobile: +39 3495232454
E-mail angelamaria.cusano@cerict.it
Nationality Italian
Date of birth 17.06.1978
Gender Female

Desired employment / Occupational field

Work experience

Dates	July 2018-to the present
Occupation or position held	Post-doctoral researcher
Main activities and responsibilities	Project title: "NANOCAN - NANOFOTONICA PER LA LOTTA AL CANCRO" <ul style="list-style-type: none">- Development of a sensing platform based on optical fiber technology for the quantitative detection of biomarkers aimed to cancer diagnosis and prognosis- Screening of bio-receptors, definition of binding affinities- Set up and optimization of functionalization protocols- Translation on optical fiber for bio-sensing
Name and address of employer	Centro Regionale Information Communication Technology (CeRICT), via Traiano Palazzo "ex poste", 82100 Benevento
Type of business or sector	Scientific Research
Dates	November 2015-November 2017
Occupation or position held	Post-doctoral researcher
Main activities and responsibilities	Project title: "Tecnologie optoelettroniche innovative per il monitoraggio e la diagnostica dell'infrastruttura ferroviaria" PON03PE_00155_1 <ul style="list-style-type: none">- Microgel synthesis suitable for opto-acoustic biosensors- optical fiber surface modification for opto-acoustic biosensor by microgel attachment
Name and address of employer	Centro Regionale Information Communication Technology (CeRICT), via Traiano Palazzo "ex poste", 82100 Benevento
Type of business or sector	Scientific Research
Dates	November 2013-October 2015
Occupation or position held	Post-doctoral researcher

Main activities and responsibilities	<p>Project title: "Design and set up of nucleic acid-based probes for sensing materials generation"</p> <ul style="list-style-type: none"> - Rational design of nucleic acid (NA) probes - Set up of Fluorescence based detection system - Surface functionalization for selective recognition - Biological fluid manipulation and NA extraction and quantification
Name and address of employer	Istituto Italiano di Tecnologia (IIT@CRIB), Largo Barsanti e Matteucci 53, 80125 Napoli (ITALY)
Type of business or sector	Scientific Research
Dates	November 2010-October 2013
Occupation or position held	Post-doctoral researcher
Main activities and responsibilities	<p>Project title: "<i>Generating bio-inspired materials through genetically engineered peptides</i>"</p> <ul style="list-style-type: none"> - Phage display Screening systems for identification of selective binders against biomolecules - Implementation of selected binders in setting up of cancer biomarker detection systems - Translation of recognition system on micro-particles-based suspension array
Name and address of employer	Istituto Italiano di Tecnologia (IIT@CRIB), Largo Barsanti e Matteucci 53, 80125 Napoli (ITALY)
Type of business or sector	Scientific Research
Dates	December 2008-October 2010
Occupation or position held	Post-doctoral researcher
Main activities and responsibilities	<p>Project title: "<i>Role of the bacterial Type III secretion System (T3SS) in the interactions between bacteria and ectomycorrhizal fungi</i>"</p> <ul style="list-style-type: none"> - Study of ectomycorrhizal interaction mechanisms - Set up of <i>in vivo</i> experiments to mimic the symbiotic behaviour between Tree-fungi-bacteria - Implementation of secretion system deletion mutants to study its effect in symbiotic mechanism
Name and address of employer	INRA-Nancy, UMR1136 "Interaction Arbres/Micro-organismes", Nancy (FRANCE)
Type of business or sector	Scientific Research
Dates	September 2006–November 2008
Occupation or position held	Post-doctoral researcher
Main activities and responsibilities	<p>Project Title: "<i>Discovering Quorum Sensing in industrially useful Fungi, a novel approach at molecular level for scaling-up in white biotech.</i>"</p> <ul style="list-style-type: none"> - Recombinant production in yeast and characterization of phenol-oxydase enzymes from basidiomycetes; - Signalling mechanisms in filamentous basidiomycetes - Rational design of point mutation DNA for engineered laccases generation
Name and address of employer	University "Paul Cézanne", UMR-CNRS 6263, Marseille (FRANCE)
Type of business or sector	Scientific Research in the context of the European project "QUORUM" (SIXTH FRAMEWORK PROGRAMME PRIORITY: "Using nature as model for new nanotechnology-based processes")
Education and training	

Dates	November 2002 –January 2006																																								
Title of qualification awarded	Ph.D in Biotechnological Sciences (Industrial Biotechnology).																																								
Principal subjects/occupational skills covered	Thesis Title: " <i>Secretion systems in Antarctic bacteria and their biotechnological applications</i> "																																								
Name and type of organisation providing education and training	Department of Organic Chemistry and Biochemistry, "Federico II" University, Naples (Italy). Founded by Ministero Italiano della Pubblica Istruzione																																								
Level in national or international classification	ISCED 08																																								
Dates	September 2001 –July 2002																																								
Title of qualification awarded	Five years degree in Chemistry, (specialization in Biochemistry and Molecular Biology)																																								
Principal subjects/occupational skills covered	Research thesis on: " <i>Characterization of molecular determinants involved in secretion in cold adapted bacteria and their implementation in recombinant protein secretion</i> "																																								
Name and type of organisation providing education and training	University of Naples, "Federicoll"																																								
Level in national or international classification	ISCED 06																																								
Personal skills and competences																																									
Mother tongue(s)	Italian																																								
Other language(s)																																									
Self-assessment																																									
European level (*)																																									
English																																									
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<table border="1"> <thead> <tr> <th colspan="4">Understanding</th> <th colspan="4">Speaking</th> <th colspan="2">Writing</th> </tr> <tr> <th colspan="2">Listening</th> <th colspan="2">Reading</th> <th colspan="2">Spoken interaction</th> <th colspan="2">Spoken production</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>B2</td> <td>Independent user</td> <td>B2</td> <td>Independent user</td> <td>C1</td> <td>Proficient user</td> <td>C1</td> <td>Proficient user</td> <td>C1</td> <td>Proficient user</td> </tr> <tr> <td>C2</td> <td>Proficient user</td> <td>B2</td> <td>Independent user</td> <td>C2</td> <td>Proficient user</td> <td>C2</td> <td>Proficient user</td> <td>B1</td> <td>Independent user</td> </tr> </tbody> </table>		Understanding				Speaking				Writing		Listening		Reading		Spoken interaction		Spoken production				B2	Independent user	B2	Independent user	C1	Proficient user	C1	Proficient user	C1	Proficient user	C2	Proficient user	B2	Independent user	C2	Proficient user	C2	Proficient user	B1	Independent user
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(*) Common European Framework of Reference for Languages																																									
Social skills and competences	Replace this text by a description of these competences and indicate where they were acquired. (Remove if not relevant, see instructions)																																								
Organisational skills and competences	DIRECTION IN SCIENTIFIC WORK - Claudia Vicario (Bachelor in Biotechnological Science from 1/06/2002 to 31/10/2003) - Maria Pia Ambrosone (Bachelor in Chemistry from 1/09/2002 to 31/10/2003) - Maria Giuliani (Bachelor in Biotechnological Science from 1/09/2003 to 15/12/2004) - Alessandro Farinella (Bachelor in Biotechnological Science from 1/10/2004 to 15/12/2005) - Foued Kermad (Master 1 NSA from 10/04/2007 to 20/06/07) - Christelle Leonetti (Master 1 NSA from 01/04/2008 to 21/06/08) - Refery of Masters 1 et 2 NSA (Université Paul Cézanne, Marseille). - Sara Spaziani (Post-doctoral researcher from 01/12/2012 to 31/05/2015)																																								

Technical skills and competences	<p>Molecular biology techniques: Extraction and purification of genomic and extra-chromosomal DNA; total RNA from prokaryotic and eukaryotic cells; PCR amplification; cloning techniques; RT-PCR; nucleotide sequencing, directed mutagenesis, heterologous expression systems (<i>E. coli</i>, <i>Pseualteromonas sp.</i>, <i>Pseudomonas sp.</i>, <i>S. cerevisiae</i> and <i>A. Niger</i>),</p> <p>Biochemistry and Immunochemical Techniques: Extraction and analysis of protein pattern (total, periplasmic and extra cellular) by mono and bi-dimensional PAGE; immunoprecipitation techniques; Western Blotting analysis; Chromatographic techniques (ionic exchange, affinity and molecular exclusion); Ultracentrifugation techniques; Enzymatic and spectrophotometric assays; Kinetic parameters determinations (K_m, k_{cat}, k_{cat}/K_m, K_i)</p> <p>Microbiology techniques: Prokaryotic cell culture; Eukaryotic manipulations (<i>Saccharomyces cerevisiae</i>, <i>filamentous fungi</i>, <i>Dictyostelium discodeum</i>); Plant growth and bacterial infiltrations on plants leaves; Characterization of growth profile in different temperature and nutritional conditions; Transformation of mesophilic hosts; Conjugation of cold adapted bacteria; Manipulation and genetic procedure on yeast and filamentous fungi, "In vivo" symbiosis experiments in green house; Microscopy techniques (co-focal, laser-micro dissection, laser tweezers).</p> <p>Technological skills: Phage display technology, ELISA on beads and by passive adsorption, set up of peptide conjugated beads-based screening techniques and detection systems, design of Nucleic Acids (NA) probes for optical detection systems, beads and NA conjugation of material for bio-sensing set up.</p>
Computer skills and competences	Use of DOS and Windows operative systems and of main applicative systems (Word, Power Point, Corel, Excel). Bio-informatics bases (PubMed, Expacy). Programs for statistic of experimental dates (Graph Pad software) images elaboration (Photoshop, CorelDraw, Image J).
Driving licence	Type B

Additional information PUBLICATION

1. Caputo TM, Aliberti A, **Cusano AM**, Ruvo M, Cutolo A, Cusano A. Stimuli-responsive hybrid microgels for controlled drug delivery: Sorafenib as a model drug. *Journal of Applied Polymer Science* 2021, 138 (14), 50147
2. **Cusano AM**, Aliberti A, Cusano A, Ruvo M. Detection of small DNA fragments by biolayer interferometry. *Analytical Biochemistry* 2020 607, 113898
3. Di Meo V, Crescitelli A, Moccia M, Sandomenico A, **Cusano AM**, Portaccio M, Lepore M, Galdi V, Esposito E. Pixelated metasurface for multiwavelength detection of vitamin D. *Nanophotonics* 2020 9 (12), 3921-3930
4. Dannhauser D, Causa F, Battista E, **Cusano AM**, Rossi D, Netti PA. In-flow real-time detection of spectrally encoded microgels for miRNA absolute quantification. *Biomicrofluidics*. 2016 Dec 6;10(6):064114.
5. Aliberti A, **Cusano AM**, Battista E, Causa F, Netti PA. High sensitive and direct fluorescence detection of single viral DNA sequences by integration of double strand probes onto microgels particles. *Analyst*. 2016 Feb 21;141(4):1250-6. doi: 10.1039/c5an02001h.
6. Battista E., Mazzarotta A., Causa F., **Cusano AM**, Netti PA. Core Shell Microgels with Controlled Structural Properties. *Polymer Int* 2016 Jan 2; DOI: 10.1002/pi.5076
7. Del Giudice F, Madadi H, Villone MM, D'Avino G, **Cusano AM**, Vecchione R, Ventre M, Maffettone PL, Netti PA. Magnetophoresis 'meets' viscoelasticity: deterministic separation of magnetic particles in a modular microfluidic device. *Lab Chip*. 2015 Apr 21;15(8):1912-22. doi: 10.1039/c5lc00106d.
8. Causa F, Aliberti A, **Cusano AM**, Battista E, Netti PA. Supramolecular spectrally encoded microgels with double strand probes for absolute and direct miRNA fluorescence detection at high sensitivity. *J Am Chem Soc*. 2015 Feb 11;137(5):1758-61. doi: 10.1021/ja511644b. Epub 2015 Jan 28
9. **Cusano AM**, Causa F, Moglie RD, Falco N, Scognamiglio PL, Aliberti A, Vecchione R, Battista E, Marasco D, Savarese M, Raucci U, Rega N, Netti PA. Integration of binding peptide selection and multifunctional particles as tool-box for capture of soluble proteins in serum. *J R Soc Interface*. 2014 Oct 6;11(99). pii: 20140718. doi: 10.1098/rsif.2014.0718.
10. Liu Y, **Cusano AM**, Wallace EC, Mekmouche Y, Ullah S, Robert V, Tron T. Characterization of C-terminally engineered laccases. *Int J Biol Macromol*. 2014 Aug;69:435-41. doi: 10.1016/j.ijbiomac.2014.05.053.
11. Mekmouche Y, Zhou S, **Cusano AM**, Record E, Lomascolo A, Robert V, Simaan AJ, Rousselot-Pailley P, Ullah S, Chaspoul F, Tron T. Gram-scale production of a basidiomycetous laccase in *Aspergillus niger*. *J Biosci Bioeng*. 2014 Jan;117(1):25-7. doi: 10.1016/j.jbiosc.2013.06.013.
12. Gargiulo N, **Cusano AM**, Causa F, Caputo D, Netti PA. Silver-containing mesoporous bioactive glass with improved antibacterial properties. *J Mater Sci Mater Med*. 2013 Sep;24(9):2129-35. doi: 10.1007/s10856-013-4968-4.
13. **Cusano AM**, Burlinson P, Deveau A, Vion P, Uroz S, Preston GM, Frey-Klett P. *Pseudomonas fluorescens* BBc6R8 type III secretion mutants no longer promote ectomycorrhizal symbiosis. *Environ Microbiol Rep*. 2011 Apr;3(2):203-10. doi: 10.1111/j.1758-2229.2010.00209.x.
14. **Cusano AM**, Mekmouche Y, Meglecz E, Tron T. Plasticity of laccase generated by homologous recombination in yeast. *FEBS J*. 2009 Oct;276(19):5471-80. doi: 10.1111/j.1742-4658.2009.07231.x.
15. Balland V, Hureau C, **Cusano AM**, Liu Y, Tron T, Limoges B. Oriented immobilization of a fully active monolayer of histidine-tagged recombinant laccase on modified gold electrodes. *Chemistry*. 2008;14(24):7186-92. doi: 10.1002/chem.200800368.
16. de Pascale D, **Cusano AM**, Autore F, Parrilli E, di Prisco G, Marino G, Tutino ML. The cold-active Lip1 lipase from the Antarctic bacterium *Pseudoalteromonas haloplanktis* TAC125 is a member of a new bacterial lipolytic enzyme family. *Extremophiles*. 2008 May;12(3):311-23. doi: 10.1007/s00792-008-0163-9.
17. Parrilli, E., Cusano, A.M., Giuliani, M. et al. Cell engineering of *Pseudoalteromonas haloplanktis* TAC125: construction of a mutant strain with reduced exo-proteolytic activity. *Microb Cell Fact* 5, P36 (2006). <https://doi.org/10.1186/1475-2859-5-S1-P36>
18. **Cusano AM**, Parrilli E, Marino G, Tutino ML. A novel genetic system for recombinant protein secretion in the Antarctic *Pseudoalteromonas haloplanktis* TAC125. *Microb Cell*

Fact. 2006 Dec 14;5:40. PubMed PMID: 17169153; PubMed Central PMCID: PMC1766363.

19. **Cusano AM**, Parrilli E, Duilio A, Sannia G, Marino G, Tutino ML. Secretion of psychrophilic alpha-amylase deletion mutants in *Pseudoalteromonas haloplanktis* TAC125. FEMS Microbiol Lett. 2006 May;258(1):67-71. PubMed PMID: 16630257.

PATENT

- Patent TO2012A001155 "MULTILAYER MICROPARTICLES COMPRISING FLUOROPHORES, filed on 27/12/2012

Applicant: Fondazione Istituto Italiano di Tecnologia

Inventors: Filippo Causa, Edmondo Battista, Anna Aliberti, **Angela Maria Cusano**, Paolo Netti

Annexes

- Patent TO2012A001154 PROBE SYSTEM FOR DETECTING A SINGLE STRAND TARGET NUCLEOTIDE SEQUENCE, filed on 27/12/2012

Applicant: Fondazione Istituto Italiano di Tecnologia

Inventors: Filippo Causa, Edmondo Battista, Anna Aliberti, **Angela Maria Cusano**, Paolo Netti

- Patent PCT/IB2013/061377 PROBE KIT FOR DETECTING A SINGLE STRAND TARGET NUCLEOTIDE SEQUENCE PATENT. December 27, 2013.

Applicant: Fondazione Istituto Italiano di Tecnologia

Inventors: Causa F, Battista E, Aliberti A, **Cusano AM**, Netti PA,

PROCEEDING

- A. Tutino ML, Parrilli E, Cusano AM, Marino G. Use of the Antarctic *Pseudoalteromonas haloplanktis* TAC125 as efficient host for recombinant protein production at low temperatures Proceedings of International Symposium on Extremophiles and Their Applications International Symposium on Extremophiles and Their Applications 2005-382
- B. Paciello A, **Cusano AM**, Santonicola MG. Bioactive and photoactive PEI hydrogels as platforms for biomolecule immobilization. European Cells and Materials Vol. 26. Suppl. 6, 2013 (page 52) ISSN 1473-2262
- C. Causa F, Aliberti A, **Cusano AM**, Battista E, Netti PA. Microgels for multiplex and direct fluorescence detection. Proc. SPIE 9529, Optical Methods for Inspection, Characterization, and Imaging of Biomaterials II, 952919 (June 22, 2015); doi:10.1117/12.2185839
- D. Battista E, Causa F, Cusano AM, Di Natale C, Scognamiglio PL, Mazzarotta A, Celetti G, Cosenza C, Aliberti A, Netti PA. Multifunctional microgels for direct, multiplexed and high sensitive detection. Procedia technology 27, 31-32