

PERSONAL INFORMATION

Alessia Cappelli

WORK EXPERIENCE

-
- | | |
|------------------------|--|
| 2019 | Member of Biovecblok s.r.l. spin-off UNICAM |
| July 2019-Today | Post Doctoral Fellowship (Assegno di Ricerca)
Prof. Irene Ricci, Laboratory of Parasitology, University of Camerino (irene.ricci@unicam.it)
Research project ERC POC 2018 "Launch test of Natural Biocides: Functional and safety assays of KYsBio formulations"
Employed in the characterization of new formulations of natural biocides based on killer yeast to control malaria and other vector borne disease
I'm designing the experimental plain and performing the experiments. |
| December 2017-May 2019 | Post Doctoral Fellowship (Assegno di Ricerca)
Prof. Guido Favia, Laboratory of Parasitology, University of Camerino (guido.favia@unicam.it)
Research project MIUR-PRIN 2015 "Symbiosis in protozoa and insect vectors: from basic research in environmental"
Employed in the characterization of the bacterial community related to parasite of the genus <i>Plasmodium</i> . Preliminary studies by DGGE and 16S MiSeq analysis were performed on malaria patients sera and <i>Plasmodium falciparum</i> coltures in order to detect the possible bacteria associated with malaria parasite. FISH experiments were performed in collaboration of the Istituto Superiore di Sanità (Roma) to localize the bacteria in <i>P. falciparum</i> coltures.
I designed the experimental plain and performed the experiments. |
| December 2012-May 2017 | Post Doctoral Fellowship (Assegno di Ricerca)
Prof. Irene Ricci, Laboratory of Parasitology, University of Camerino (irene.ricci@unicam.it)
Research project IDEAS Programme ERC Starting Grant "Yeasts symbionts of malaria vectors: from basic research to the management of malaria control"
Employed in the study of main characteristics of the killer toxin (KT), a protein produced by the symbiotic yeasts <i>Wickerhamomyces anomalus</i> isolated from vector of malaria <i>Anopheles stephensi</i> mosquitoes. The anti-microbial activity of KT was assess <i>in vitro</i> and <i>in vivo</i> against the malaria parasite, <i>Plasmodium</i> .
I designed the experimental plain and performed the experiments. |
| July 2009 – July 2012 | Post Doctoral Fellow (Co.co.co)
Prof. Guido Favia, Laboratory of Parasitology, University of Camerino (guido.favia@unicam.it)
Research project FIRB-IDEAS "Assessment of the potential role of bacteria of the genus <i>Asaia</i> as microbial agent for paratransgenic control of malaria vectors"
Employed in the study of the symbiotic relationship of bacteria of genus <i>Asaia</i> with mosquitoes vectors of diseases as malaria, dengue, yeallow fever, zika virus.
The role of <i>Asaia</i> was investigated with molecular tecniques, immunostaing assays and in vivo experiments.
I designed the experimental plain and performed the experiments. |

PROJECTS AND COLLABORATIONS

PROJECTS

- Collaborator in the project **FAR 2018: HEMP AGAINST PESTS**. *Cannabis sativa* by-products as a source of repellents and insecticides. Hemp derivatives-based new formulations for effective, safe and eco-friendly applications in human health and agriculture. PI: Prof. Massimo Nabissi, UNICAM (2018)
- Secondary Proposer (**UNICAM REFERENT**) in the project **Aedes Invasive Mosquitoes (AIM) COST ACTION OC-2017-1-22105**. PI: Prof. Alessandra della Torre, Università di Roma Sapienza (2017)

COLLABORATIONS

Italian research groups: Prof. **C. Bandi** (Department of Biosciences and Pediatric Clinical Research Center, University of Milan); Prof. **L. Sacchi** (Dipartimento di Biologia e Biotecnologie "L. Spallanzani", Università di Pavia); Prof. **L. Polonelli** (Dipartimento di Scienze Biomediche, Biotecnologiche e Traslazionali, Università degli Studi di Parma); **L. Rinaldi** (Department of Veterinary Medicine and Animal Production, University of Naples)

International research groups: Prof. **S. O'Neill** (Monash University, Melbourne, Australia); Prof. **PEM Ribolla** (Biotechnology Institute & Biosciences Institute at Botucatu, Sao Paulo State University, Brazil).

EDUCATION AND TRAINING

- 2017 [Exam committee member for Parasitology](#)
University of Camerino, Camerino, Italy
- 16-17 July 2012 [INFRAVEC Workshop](#). Bioinformatic Workshop for Vector Biologists.
Hinxtton, Cambridge, United Kingdom
- 6-11 July 2009 [Malaria Workshop](#). Reducing *Plasmodium* transmission and malaria burden by integrated vector control: A multi-disciplinary and multi-cultural training workshop.
University of Camerino, Camerino, Italy
- 2006 - 2009 [Ph.D in Environmental Sciences and Public Health XXI cycle - Development of Biotechnology for Environmental Sciences and Public Health](#)
Title of thesis: "*Development of a diagnostic procedure for genetic analysis of genes involved in Monogenic Diseases with autosomal dominant inheritance (MODY2, MODY3 and CADASIL)*" (Supervisor Prof. Cristina Miceli and Dott. Luigi Pianese).
University of Camerino, Italy
- My Ph.D. was supported by a convention between the ASUR ZT13 (Ascoli Piceno) and the Doctoral Course in Environmental Sciences and Public Health (University of Camerino). I worked at Molecular Medicine Laboratory of U.O. Clinical and Microbiology Laboratory (ASUR ZT13, Ascoli Piceno), established in 2006 with the aim to become a regional reference centre for the molecular diagnosis of monogenic disease with autosomal dominant inheritance, as some forms of diabetes in young patients, Maturity Onset Diabetes of the Young type 2 and 3 (MODY 2 and 3), and a form of vascular dementia, the cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL).
I development the diagnosis assay for each pathology and performed the molecular diagnosis of all patients from DNA extraction to data analysis.
- January-September 2007: [English Course](#)
Wall Street Institute, Ascoli Piceno, Italy
- November 2006 [Authorization to practice the profession of Biologist](#)
University of Camerino, Camerino, Italy

- 02-06 October 2006 **Stage at "Laboratorio di Neuropatologia del Policlinico Gian Battista Rossi"**
Verona, Italy

- 2003 - 2005 **Master Degree in "Molecular Biology"**
Title of thesis: "Espressione e funzione del recettore TRPV1 in tumori uroteliali umani"
Rank: 110 cum laude - University of Camerino, Camerino, Italy

- 2000 - 2003 **Degree in "Biology" (3 years)**
Title of thesis: "Analisi dell'espressione dei recettori neurochininici e vanilloidi nei timociti di ratto mediante real-time PCR"
Rank: 110 cum laude - University of Camerino, Camerino, Italy

- July 2000 **Maturità scientifica**
Rank: 82/100- Liceo Scientifico "A. Orsini", Ascoli Piceno, Italy

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B1	C1	B1	B1	C1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
[Common European Framework of Reference for Languages](#)

Communication skills Ability to work with colleagues from different countries

Organisational / managerial skills I am able to independently organize my work and the work of my colleagues and students. I have followed the laboratory activity of undergraduate, graduate and PhD students.

Job-related skills **Molecular Biology:** acid nucleic (DNA and RNA) extraction, qualitative and quantitative PCR, acid nucleic and protein electrophoresis; Western Blot, DGGE, Sanger sequencing; cloning with traditional and expression vectors, IFA, FISH.

Cellular Biology: maintenance of primary cell cultures and immortal cell lines cell in selective culture medium; counting cells using a microscope counting chamber; isolation and extraction of Rat Thymocytes using Ficoll protocol; FACS; MMT and SRB assay, killer activity assays of toxic proteins.

Microbiology: Bacteria and yeasts cultures in universal and selective medium, isolation of bacteria and yeasts from insects.

Insectary competences: maintenance of several strain of mosquito (*Anopheles stephensi*, *An. gambiae*, *Aedes albopictus* and *Ae. aegypti*, *Culex pipiens*, *Cx. quinquefasciatus*), colonization of mosquito using wild type and genetically modified bacteria and yeasts. Ability to maintain the life cycle of *Plasmodium berghei* in the murine model.

Excellent use of the Instruments: Automated DNA Extraction Systems, Automated capillary Electrophoresis, Spectrophotometer, qPCR,

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Independent User	Proficients	Proficients	Proficients	Proficients

Levels: Basic user - Independent user - Proficient user
[Digital competences - Self-assessment grid](#)

Operating Systems: Windows

Word Processing: Office (Word, Excel, Power Point)

Databases and softwares for sequence analysis: Sequence analysis software, SeqScape software, Chromas, NCBI, Ensembl, HGMD data base, VectorBase

Scientific Graphing: GraphPad Prism, MxPro, Bio-rad CFX Manager

Basic Knowledge of Bioinformatics (Blast, ClustalW, QIIME, etc.)

Driving licence B

ADDITIONAL INFORMATION

Brief track-record

Research interests

General and molecular parasitology, genetics, microbiology, cellular biology, molecular biology (and their applications), study of symbiosis in mosquito vectors.

Publications

19 articles in international journals (2 as first and corresponding author and 6 as first author), 1 chapter of book and 13 abstract in journal (two of them published in European Journal of Human Genetics Supplement), 8 Poster in Congress (two awarded with honours).

Bibliometric indices

Scopus: H-index of 9 with 246 citations; Google Scholar: H-index of 10 with 403 citations. My ORCID ID is: 0000-0003-4553-9360.

Teaching activity

I was co-supervisors of 25 undergraduate students of the bachelor in Biology and Biosciences and Biotechnology, 15 students of the Master degree in Biology and 7 PhD students. I have been "teaching assistant" in the Laboratory practice course for the Bachelor Program in Biosciences and Biotechnology.

Review activity

I have been serving as referee for the journals: Recent Patents on CNS Drug Discovery, Neurology International, International Journal of Insect Science, Gene, Diabetes Research and Clinical Practice and Ecological Genetics and Genomics.

ANNEXES

Publications

Cappelli A, Damiani C, Mancini MV, Valzano M, Rossi P, Serrao A, Ricci I, Favia G. Interactions between *Asaia* and mosquito immune system: implications in malaria control. **Accepted in Front. Genet. doi:10.3389/fgene.2019.00836**

Cappelli A, Valzano M, Cecarini V, Bozic J, Rossi P, Mensah P, Amantini C, Favia G, Ricci I. (2019) Killer yeasts exert anti-plasmodial activities against the malaria parasite *Plasmodium berghei* in the vector mosquito *Anopheles stephensi* and in mice. *Parasit Vectors*. 12:329.

Cappelli A, Capone A, Valzano A, Bozic J, Preziuso S, Mensah P, Varotto Boccazzi I, Rinaldi L, Favia G, Ricci I (2019) Denaturing gradient gel electrophoresis analysis of bacteria in Italian ticks and first detection of *Streptococcus equi* in *Rhipicephalus bursa* from the Lazio region. *Vector-Borne and Zoonotic Dis*19:328-332

Alonso DP, Mancini MV, Damiani C, **Cappelli A**, Ricci I, Alvarez MVN, Bandi C, Ribolla PEM, Favia G. (2019) Genome Reduction in the Mosquito Symbiont *Asaia*. *Genome Biol Evol.* 11:1-10.

Mancini MV, Damiani C, Accoti A, Tallarita M, Nunzi E, **Cappelli A**, Bozic J, Catanzani R, Rossi P, Valzano M, Serrao A, Ricci I, Spaccapelo R, Favia G. (2018) Estimating bacteria diversity in different organs of nine species of mosquito by next generation sequencing. *BMC Microbiology* 18:126

Bozic J, Capone A, Pediconi D, Mensah P, **Cappelli A**, Valzano M, Mancini MV, Scuppa P, Martin E, Epis S, Rossi P, Favia G, Ricci I. (2017) Mosquitoes can harbour yeasts of clinical significance and contribute to their environmental dissemination. *Environ Microbiol Rep.* 9:642-648.

Cappelli A, Damiani C, Valzano M, Mancini MV, Rossi P, Ricci I, Chiodera A, Favia G. (2017) Molecular Diagnosis of Malaria Infection: A Survey in a Hospital in Central Italy. *Adv Biotech & Micro.* 5: 555670.

Mancini MV, Spaccapelo R, Damiani C, Accoti A, Tallarita M, Petraglia E, Rossi P, **Cappelli A**, Capone A, Valzano M, Picciolini M, Diabaté A, Facchinelli L, Ricci I, Favia G. (2016) Paratransgenesis to control malaria vectors: a semi-field pilot control. *Parasites & Vectors* 9:1427.

Valzano M, Cecarini V, **Cappelli A**, Capone A, Bozic J, Cuccioloni M, Epis S, Petrelli D, Angeletti M, Eleuteri AM, Favia G, Ricci I. (2016) A yeast strain associated to *Anopheles mosquitoes* produces a toxin able to kill the malaria parasite. *Malaria Journal* 15:21.

Rossi P, Ricci I, **Cappelli A**, Damiani C, Ulissi U, Mancini MV, Valzano M, Capone A, Epis S, Crotti E, Chouaia B, Scuppa P, Joshi D, Xi Z, Mandrioli M, Sacchi L, O'Neill SL, Favia G. (2015) Mutual exclusion of *Asaia* and *Wolbachia* in the reproductive organs of mosquito vectors. *Parasites & Vectors*, 8:278

Cappelli A, Ulissi U, Valzano M, Damiani C, Epis S, Gabbriellini MG, Conti S, Polonelli L, Bandi C, Favia G, Ricci I. (2014) A *Wickerhamomyces anomalus* Killer Strain in the Malaria Vector *Anopheles stephensi*. *PLoS One*, 9:e95988.

DeFrecece C, Damiani C, Valzano M, D'Amelio S, **Cappelli A**, Ricci I, Favia G. (2014) Detection and isolation of the α -proteobacterium *Asaia* in *Culex* mosquitoes. *Medical and Veterinary Entomology*, 28:438-442

Ricci I, Valzano M, Ulissi U, Epis S, **Cappelli A**, Favia G. (2012) Symbiotic Control of Mosquito Borne Disease. *Pathog Glob Health*, 106:380-385.

Cappelli A, Silvestri S, Tumini S, Carinci S, Cipriano P, Massi L, Staffolani P, Pianese L. (2011). A new de novo mutation in the GCK gene causing MODY2. *Diabetes Research and Clinical Practice*, 93:41-43

Ricci I, Mosca M, Valzano M, Damiani C, Scuppa P, Rossi P, Crotti E, **Cappelli A**, Ulissi U, Capone A, Esposito F, Alma A, Mandrioli M, Sacchi L, Bandi C, Daffonchio D, Favia G. (2011). Different mosquito species host *Wickerhamomyces anomalus* (*Pichia anomala*): perspectives on vector-borne diseases symbiotic control. *Antonie Van Leeuwenhoek*, 99: 43-50.

Ricci I, Damiani C, Rossi P, Capone A, Scuppa P, **Cappelli A**, Ulissi U, Mosca M, Valzano M, Epis S, Crotti E, Daffonchio D, Alma A, Sacchi L, Mandrioli M, Bandi C, Favia G. (2011). *Mosquito symbioses: from basic research to the paratransgenic control of mosquito-borne diseases*. *Journal of applied entomology*, 135:487-493

Bianchi S, Rufa A, Ragno M, D'eraimo C, Pescini F, Pantoni L, **Cappelli A**, Perretti A, Zicari E, Zolo P, Inzitari D, Dotti MT, Federico A. (2010). *High frequency of exon 10 mutations in the NOTCH3 gene in Italian CADASIL families: phenotypic peculiarities*. *Journal of Neurology*, 257:1039-1042.

Cappelli A, Ragno M, Cacchiò G, Scarcella M, Staffolani P, Pianese L (2009). *High recurrence of the R1006C NOTCH3 mutation in central Italian patients with cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL)*. *Neuroscience Letters*, 462:176-178

Cappelli A, Tumini S, Consoli A, Carinci S, Piersanti C, Ruggiero G, Simonella G, Soletti F, Staffolani P, Pianese L (2009). *Novel mutations in GCK and HNF1A genes in Italian families with MODY phenotype*. *Diabetes Research and Clinical Practice*, 83:72-74.

Chapter book

Ricci I, Scuppa P, Damiani C, Rossi P, Capone A, De Freece C, Valzano M, **Cappelli A**, Mosca M, Ulissi U, Favia G. (2012). Facing malaria parasite with mosquito symbionts. In *Malaria Parasites*. Ed. Intech Open access publisher ISBN 979-953-307-072-7 by Omolade Okwa Lagos State University, Nigeria.

Abstracts of journal

Mancini MV, Spaccapelo R, Damiani C, **Cappelli A**, Capone A, Rossi P, Valzano M, Accoti A, Facchinelli L, Serrao A, Ricci I, Favia G. Paratransgenesis to control mosquito borne disease: from beach to field. XXIX Congresso SOIPA, Bari, 21-24 giugno 2016.

Ricci I, Damiani C, Rossi P, Capone A, Valzano M, **Cappelli A**, Bozic J, Mancini MV, Favia G. Symbionts and mosquito vectors: work in progress at UNICAM. XXVIII Congresso SOIPA (p. 61). Roma, Italia, 24-27 giugno 2014.

Mancini MV, Bozic J, Capone A, **Cappelli A**, Damiani C, Epis S, Rossi P, Valzano M, Bandi C, Ricci I, Favia G. Bacterial symbiotic control of mosquito vectors: from bench to field. XXVIII Congresso SOIPA (p. 183). Roma, Italia, 24-27 giugno 2014.

Bozic J, Capone A, Valzano M, **Cappelli A**, Damiani C, Rossi P, Mancini MV, Favia G, Ricci I. Using symbiotic yeasts associated to mosquitoes to prevent plasmodial infection in malaria vectors: current status and future strategies for symbiotic control of mosquito borne disease. XXVIII Congresso SOIPA (p. 184). Roma, Italia, 24-27 giugno 2014.

Capone A, Bozic J, **Cappelli A**, Damiani C, Rossi P, Valzano M, Epis S, Favia G, Ricci I. Engineering of the yeast *Wickerhamomyces anomalus*, symbiont of mosquito species relevant to public health, for paratransgenic control strategies. XXVIII Congresso SOIPA (p. 185). Roma, Italia, 24-27 giugno 2014.

Valzano M, **Cappelli A**, Ulissi U, Damiani C, Capone A, Bozic J, Cecarini V, Favia G, Ricci I. A killer yeast strain is harbored in malaria vectors: new insights in the mosquito biology and possible implications in the malaria transmission blocking. XXVIII Congresso SOIPA (p. 213). Roma, Italia, 24-27 giugno 2014.

Capone A, Ricci I, Damiani C, Rossi P, Scuppa P, Valzano M, **Cappelli A**, DeFreece C, Ulissi U, Favia G. Mosquito/microbiota interactions: from basic research to biotechnological perspectives in mosquito borne disease control. XXVII Congresso Nazionale della Società Italiana di Parassitologia. 26-29 June 2012 Alghero, Italy.

Damiani C, Ricci I, **Cappelli A**, Ulissi U, Rossi P, Capone A, Scuppa P, Mosca M, Valzano M, Crotti E, Epis S, Esposito F, Sacchi L, Mandrioli M, Bandi C, Daffonchio D, Favia G. *Acetic acid bacteria in malaria vectors: a possible strategy for malaria control?* XXVI Congresso Nazionale della Società Italiana di Parassitologia. 22-25 June 2010 Perugia, Italy.

Rossi P, Damiani C, Ricci I, **Cappelli A**, Ulissi U, Capone A, Scuppa P, Mosca M, Valzano M, Esposito F, Sacchi L, Bandi C, Daffonchio D, Favia G. *Bacterial symbionts in Aedes aegypti and Aedes albopictus*. XXVI Congresso Nazionale della Società Italiana di Parassitologia. 22-25 June 2010 Perugia, Italy.

Ragno M, **Cappelli A**, Cacchiò G, Scarcella M, Di Marzio F, Staffolani P, Pianese L. *Analisi mutazionale del gene Notch3 in 60 famiglie provenienti da una ristretta area geografica: alta ricorrenza della mutazione R1006C in 10 famiglie CADASIL*. XLIX Congresso nazionale SNO. 13-16 May 2009 Palermo, Italy.

Cappelli A, Silvestri S, Staffolani P, Consoli A, Pianese L (2008). *A novel splicing mutation in the HNF1a gene in an Italian family with MODY3 disease*. European Journal of Human Genetics, Vol 16 Supplement, p 268

Pianese L, **Cappelli A**, Scarcella M, Cacchiò G, Staffolani P, Ragno M (2008). *Screening for CADASIL in central Italian patients*. European Journal of Human Genetics, Vol 16 Supplement, p 242.

Ragno M, Pianese L, Scarcella M, Cacchiò G, **Cappelli A**, Caporale CM. *The clinical phenotype in 9 CADASIL families with mutation CGC-TGC at codon 1006 in the exon 19 Notch3 gene*. XXXVIII Congresso Società Italiana di Neurologia. 13-17 Ottobre 2007 Firenze, Italy.

Posters in Congress

Cappelli A, Valzano M, Rossi P, Favia G, Ricci I. The killer yeast *Wickerhamomyces anomalus* is a potential new tool for the symbiotic control of malaria. MOLI 2019: Eighth International Symposium on Molecular Insect Science, 7-10 July Barcellona, Spain.

Capone A, **Cappelli A**, Valzano M, Bozic J, Preziuso S, Marcoccia R, Mensah, Chiodera A, Epis S, Rinaldi L, Cringoli G, Favia G, Ricci I. Detection of *Streptococcus equi* DNA in *Rhipicephalus bursa* ticks from Southern Italy. SisVet, 28 giugno-01 luglio 2017, Napoli, Italy.

Cappelli A, Ragno M, Cacchiò G, Scarcella M, Silvestri S, Staffolani P, Pianese L. *High recurrence of the R1006C Notch3 mutation in central Italian patients with Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy (CADASIL)*. 59° Congresso Nazionale AIPaCMeM. 12-15 May 2009 Tivoli (RM), Italy. **Award to scientific work by President of Regione Marche della AIPaCMeM**

Pianese L, **Cappelli A**, Scarcella M, Cacchiò G, Staffolani P, Ragno M. *Screening for CADASIL in central Italian patients*. 58° Congresso Nazionale AIPaCMeM. 10-13 Giugno 2008 Caserta, Italy

Cappelli A, Silvestri S, Staffolani P, Consoli A, Pianese L. *A novel splicing mutation in the HNF1A gene in an Italian family with MODY3 disease*. 58° Congresso Nazionale AIPaCMeM. 10-13 Giugno 2008 Caserta, Italy. **Poster awarded with honours.**

Cappelli A, Ragno M, Scarcella M, Cacchiò G, Caporale CM, Staffolani P, Pianese L. *Screening mutazionale del gene Notch3: due mutazioni frequenti nel territorio di Ascoli Piceno*. 57° Congresso Nazionale AIPaCMeM. 27-30 Novembre 2007 Caserta, Italy

Pianese L, **Cappelli A**, Soletti F, Simonella G, Staffolani P. *Analisi mutazionale dei geni GCK e HNF1a in pazienti con quadro clinico riconducibile a diabete mellito tipo Mody*. 57° Congresso Nazionale AIPaCMeM. 27-30 Novembre 2007 Caserta, Italy

Cappelli A, Ragno M, Scarcella M, Cacchiò G, Caporale CM, Staffolani P, Pianese L. *Screening mutazionale del gene Notch3: due mutazioni frequenti nel territorio di Ascoli Piceno*. X Congresso Nazionale SIGU 14-16 novembre 2007 Montecatini Terme (PT), Italy.

Other Poster

Ricci I, Ulissi U, Mosca M, Damiani C, Scuppa P, **Cappelli A**, Favia G. Antimicrobial toxins are produced by symbiotic yeasts in the midgut of some malaria vectors. (Istituto Superiore di Sanità, Rome, Italy, 11 Jan. 2011).

Camerino, 06.09.2019