



Francis Aheto (MSc.)

● ABOUT ME

PhD student in Food Engineering and Biotechnology with a strong background in food research and innovation. I specialize in dietary interventions that enhance gut microbiome composition and functionality, the development of functional food products, food fermentation systems, emerging food biotechnologies, microbiology, and sustainability in the agro-food sector. I thrive both independently and within cross-functional teams, using collaboration to tackle complex challenges efficiently. My expertise includes laboratory analysis, scientific communication, and strategic problem-solving, all focused on delivering innovative solutions. My ultimate professional goal is to contribute to global food and nutrition security (Zero Hunger).

● EDUCATION AND TRAINING

01/11/2022 – CURRENT Bolzano, Italy

PHD. FOOD ENGINEERING AND BIOTECHNOLOGY - 38TH CYCLE Libera Università di Bolzano |
Micro4Food Laboratory

Supervisor: Professor Raffaella Di Cagno **Co-Supervisor:** Dr. Olga Nikoloudaki

Research Scope & Skills: Simulator of Human Intestinal Microbial Ecosystem (SHIME®), fermented foods (sourdough, *moringa oleifera*, *chlorella vulgaris* and spent *coffee arabica* grounds), probiotics (lactic acid bacteria, acetic acid bacteria & yeast), synthetic microbial communities for food fermentations, metagenomics, metatranscriptomics and metabolomics techniques; short-chain fatty acids extraction and analysis using HPLC, DNA and RNA extraction and sequencing, qPCR, standard PCR (16S rRNA, 26S rRNA & Bacteriocins), and biostatistics (XLSTAT and R programming).

Address Universitätsplatz 1 - Piazzetta dell'Università, 1, 39100, Bolzano, Italy | **Website** <https://www.unibz.it/> |

Field of study Food Microbiology |

Thesis 'Diet, Probiotics and Prebiotics to Improve the Composition and Functionality of the Human Gut Microbiome: In Vitro and In Vivo Challenges'

08/2019 – 10/2021 Ancona, Italy

MSC. FOOD AND BEVERAGE INNOVATION AND MANAGEMENT Università Politecnica delle Marche (UNIVPM)

Website <https://www.univpm.it/Entra/> | **Final grade** 110/110 Cum Laude (Distinction) |

Thesis <https://tesi.univpm.it/handle/20.500.12075/737>

07/2014 – 06/2018 Kumasi, Ghana

BSC. FOOD SCIENCE AND TECHNOLOGY Kwame Nkrumah University of Science and Technology

Website <https://www.knust.edu.gh/> | **Final grade** 1st Class Honours

● ACADEMIC AND INDUSTRIAL WORK EXPERIENCE

01/03/2023 – CURRENT

Teaching Assistant - Libera Università di Bolzano, Italy

1. MSc. course: '*The natural microbial starters for innovation and authenticity.*' 44706A • AGR/16 • Master's Degree in Food Science for Innovation and Authenticity • EN • 2022/2023 • 20 hours
2. MSc. course: '*The natural microbial starters for innovation and authenticity.*' 44706A • AGR/16 • Master's Degree in Food Science for Innovation and Authenticity • EN • 2023/2024 • 24 hours
3. BSc. course: '*Microbial fermentations in gastronomy and methods of recovery of agro-food by-products.*' 40417 • AGR/16 • L-GASTR Enogastronomy in Mountain Areas • EN • 2024/2025 • 18 hours

Link <https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/47618-francis-aheto>

10/2021 – 05/2022

Research Intern: Food, Industrial and Environmental Microbiology Lab - Università Politecnica delle Marche, Italy

1. Genetic, biochemical and physiological aspects of wine yeasts and its metabolites of the industrial interest.

08/2018 – 07/2019

Teaching and Research Assistant - Kwame Nkrumah University of Science and Technology, Ghana.

1. Assisted with teaching, research and laboratory activities for 'Food Microbiology', 'Research Design and Implementation' and 'Introduction to Food Science and Technology' BSc. courses at the Department of Food Science and Technology
2. Created scientific journal club for students and assisted with seminar organization

03/2018 – 06/2019

Food Innovation and Production Manager (Volunteer) - Fieldswite Company Limited, Ghana

1. Innovated and managed "Sweetpot yoghurt" (orange-fleshed sweetpotato-based yoghurt) production
2. Researched on recipe standardization of the yoghurt and ensured product safety by creating an HACCP plan

11/2016 – 04/2017

Food Research Intern: Council for Scientific and Industrial Research – Food Research Institute, Ghana

1. Assessed the microbial and physicochemical quality of street food samples
2. Developed beer from local sorghum varieties

● RESEARCH EXPERIENCE

2018 – 2024

Selected Research Studies Collaborated/Volunteered In

1. Tailored metabolism of lactic acid bacteria in food, skin care and/or pharmaceutical preparations for healthcare and/or food applications. Micro4Food Lab - UNIBZ. [since 2024]
2. Validation of sourdough key players using *de novo* synthetic microbial communities. Micro4Food Lab - UNIBZ. [since 2023]
3. The impact of a European elderberry extract on the human gut health: *in vitro* study using the Simulator of Human Intestinal Microbial Ecosystem (SHIME®). Micro4Food Lab - UNIBZ. [since 2023]
4. DNA extraction, 16s rRNA sequencing and qPCR analysis to identify among two microscopically indistinguishable species of powdery mildew (*erysiphe pisi* & *erysiphe trifolii*) affecting pea crop. IAS-CSIC. [2022]
5. *In-Vivo* Glycaemic index evaluation of 'butter bread' made from high-quality cassava flour composites. KNUST, Food Analysis Laboratory & KNUST Clinic. [2019]
6. Valorization of pineapple core waste as a cheaper bulking agent in confectionery products. HPW Fresh & Dry Ltd. & KNUST-Food Analysis Laboratory. [2019]
7. Recipe standardization, nutritional and consumer acceptance of orange-fleshed sweet potato yoghurt. Food Product Development Laboratory-KNUST & CSIR-Crop Research Institute. [2019]
8. Microbial safety evaluation of street-vended 'waakye' with its accompaniment sample; Gram test, catalase test, and microscopy of aerobic mesophiles and yeasts. CSIR-FRI, Microbiology Department. [2018]
9. Development, sensory evaluation, and therapeutic effect of moringa-pineapple peel infusion for green tea. Food Product Development Laboratory, KNUST. [2018]

● PUBLICATIONS

Academic

1. Nikoloudaki, O.¹, Aheto, F.¹, Di Cagno, R., & Gobbetti, M. (2024). Synthetic microbial communities: A gateway to understanding resistance, resilience, and functionality in spontaneously fermented food microbiomes. *Food Research International*, 192: 114780. <https://doi.org/10.1016/j.foodres.2024.114780>

● SUMMER SCHOOL AND STUDY ABROAD

18/06/2024 – 20/06/2024

Advanced Course in "Metabolic Engineering and Systems Biology"

Host institution: Chalmers University of Technology, Göteborg, Sweden

Course content: Constraint-based genome-scale modelling, enzyme-constrained modelling, fermentation technologies, proteomics technologies, RNAseq data generation and analysis, and integrative gene-expression data analysis.

19/06/2023 – 23/06/2023

Summer School on “Animal gastrointestinal microbiome (foregut, midgut and hindgut): exploring the relationship between microbial communities and fatty acids”

Host institution: Università di Firenze, Florence, Italy

Course content: Microbial diversity profiling by targeted metagenomics and shotgun metagenomics, practical - methods for fatty acid profile analysis, practical - analysis of taxonomic marker genes (16S): from raw reads to taxonomic classification with dada2, and conceptual strategies for the inference of microbial association networks.

10/2021 – 05/2022

Erasmus+ Research Traineeship (6-Month Program in Córdoba, Spain)

Host Institution: Institute for Sustainable Agriculture - Spanish National Research Council (CSIC).

Project: DNA extraction and PCR analysis to identify among two microscopically indistinguishable species of powdery mildew (*erysiphe pisi* & *erysiphe trifolii*) affecting pea crop

Link <https://www.ias.csic.es/>

CONFERENCES AND SEMINARS

Paper Poster Presentations at National/International Conference

1. Poster presentation at the 27th Workshop on the Developments in the Italian PhD Research on Food Science, Technology and Biotechnology (National Conference, Napoli. September 2024, 13-15th)
2. Poster presentation at the 28th Workshop on the Developments in the Italian PhD Research on Food Science, Technology and Biotechnology (National Conference, Catania. September 2024, 18-20th)
3. Poster presentation at the 1st Workshop in Metabolic Engineering and Systems Biology (International Conference, Göteborg. June 2024, 16-20th)
4. Poster presentation at the 38th EFFoST International Conference (International Conference, Bruges. November 2024, 16-20th)
5. Poster presentation at the 8th Ghana Science Association Conference (National Conference, Kumasi. May 2019, 1st-3rd)

HONOURS AND AWARDS

06/2020

3rd Place Winner - Aula Emprende Design Thinking & Entrepreneurship Challenge – Università Politecnica delle Marche

05/2019

2nd Best Undergraduate Poster - 8th GSA Research Seminar Presentation – Ghana Science Association

07/2018

Best Graduating Student - Bsc. Food Science and Technology – Premier College of Science Excellence Awards, KNUST

LANGUAGE SKILLS

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C2	C2	C2	C2
ITALIAN	A2	A2	A2	A2	A2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user