Reindorf Boateng

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PERSONAL PROFILE

I am a junior research scientist with over four years of experience in modifying biomolecules such as starch and protein using novel methods to **drive innovation in food applications**. My background includes process optimization, product development, and translating research into practical solutions for real-world challenges. ***I have successfully designed and developed a porous structure derived from modified polysaccharide-based sources, opening up new possibilities for their integration into functional food systems***. I am passionate about leveraging my expertise to contribute to the industry's progress and the development of innovative food structures utilized in food systems.

AREA OF EXPERTISE

- Food Chemistry, Food Analysis & Food Biopolymers (polysaccharide/protein systems)
- Food Bioactive Compounds (Polyphenols & Antioxidants extraction)
- Food Safety and Quality Assurance/Control
- Prerequisite programs (HACCP, GMP), Codex Alimentarius

KEY SKILLS AND COMPETENCIES

- **Communication skills** - Presented on my project at 3 national workshop and 7 internationals conferences
- Ability to **work independently- Needed little to no supervision** ○ **Project m**anagement & **Time management** skills ○ **Initiative-taking, Creative, Proactive skills- Developed an innovative plant based porous structure for controlled release of food related bioactive compounds** ○ Analytical skills;
- (Microscopy, **LCMS, GC-MS, HPLC, Spectrometry, thin layer & Column chromatography, rheometer, differential scanning calorimetry, supercritical drying equipment, freeze dryer, cold plasma technology)**
- Physicochemical, microscopic and techno-functional characterization of samples

EDUCATION AND TRAINING

- **Ph.D. in Food Science** at Universita degli studi di Teramo, Teramo, Italy: 01/11/2022 – Current

➢ **Thesis title**: *Exploring the micro structural, physical and techno-functional properties of starch of different botanical origins; from granules to gels.*

- Master of science in Food Beverage Innovation & Management at Università politecnica delle marche: 02/10/2019 – 13/10/2021, Ancona, Italy. Final grade: ***110/110 lode (with distinction)***

➢ **Thesis title**: *Variation of Fruit Vitamin C and Vitamin B9 content in Advanced Strawberry Breeding Selections.*

Some selected courses undertaken

Microbiological risk Management, Energy and Environmental Sustainability, Fruit Quality Control, Food Biochemistry, Emerging Food Technology, Accessory Foods, and Beverages, Enzymology in Food Processing, Beneficial Microbes, Functional Components

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- **Bachelor of science in Food Science& Technology at** Kwame Nkrumah University of Science and Technology, Kumasi, Ghana:14/08/2014 – 22/05/2018. **Final grade: First Class Degree Honors**

– **Thesis title:** Influence of Drying on the Phytochemicals and Antioxidant Properties of Bombax buonopozense (Gold Coast Bombax) Sepals *Selected courses undertaken*

Food Enzymology, Food Analysis, Food Chemistry, Food Engineering, Food additives, Food Microbiology, Food Processing Technology, Food Product Development, Nutrition, and Health.

WORK & ACADEMIC EXPERIENCE

- **Visiting Ph.D. Student-** University of Compostela, Santiago- A Coruña- Spain. 11/11/2024- 20/04/2025

Duties carried out:

- Developed an **innovative porous starch and protein structures** (aerogels and cryogels) which can serve as a delivery mechanism for bioactive compounds such as beta carotene, vitamin C and plant essential oil.
- Expert in the control and handling **of supercritical drying, freeze drying, BET** equipment for analytical evaluations.

- **Tutoring Activities for Post-Graduate Students**- Universita degli studi di Teramo, Italy 13/10/2023 – 30/06/2024

➢ *Duties performed:*

- Involved in preliminary and integrative disciplinary activities; organized group activities to support teaching – Coordinated with teachers of the disciplines involved in the activities
- Provided guidance to students aimed at removing obstacles to successful course attendance and full participation in university activities.
- Performed assigned activities diligently and punctually, following the defined methods and timelines

- **Legume breeding (Intern) at** Instituto de Agricultura Sostenible (IAS-CSIC). 01/11/2021 – 07/05/2022 Cordoba, Spain

➢ *Duties performed:*

- Bred legumes for disease resistance on the Open field Contributed to field and greenhouse phenotyping, including disease inoculations under controlled conditions
- Investigated the microbial inoculation& determined Vicine content in legumes (peas, fava bean, soybean) using the HPLC
- Extracted RNA & DNA of pea infected by powdery mildew species (Erysi phe pisi and Erysiphe trifolii)
- Extracted & Purified Pyrenophoric acid, a secondary metabolite from rice-infected Aschochyta fabae & Collectotricum fungus
- Screened for new sources of resistance to broomrape (parasitic weed) in the pea germination collection

- **Food Safety & Quality Laboratory Intern** in Food Technology Laboratory, -Ancona, Italy. 10/10/202019/05/2021

➢ *Duties performed:*

- Achieved new **skills in analytical methods for food analysis and in** sample preparation (extraction methods, purification, derivatization procedures).
- **Extracted volatile compounds** and food lipids from (Cheese, and Paccasassi plants) **with the GC-MS**
- **Ascertained** the quality parameters of sardine fillets using **cold plasma activated water**
- Prepared vegetable rennet extract (Cardoon thistle) for cheese-making

- **Teaching & Research Assistant (Full Time) at** Kwame Nkrumah University of Science & Technology, Kumasi- Ghana. 02/09/2018 – 31/07/2019

➢ *Duties performed:*

- **Organized and supervised students' practical sessions** in the Food Analysis laboratory
- Performed different safety and quality (microbiological and chemical) analyses on commercial food products •

Organized workshops to train food workers on food safety and hygiene practices at the workplace

- **Actively involved in the day-to-day administrative** duties.

Quality Assurance Officer (Intern) in a Gari Processing Company Kumasi, Ghana: 08/2017 – 04/2018

➢ *Duties performed:*

- Collaborated with research team in producing new product
- Designed Standard **Operating Procedure (SOP)** for the company new grating machine
- Applied **HACCP and Codex Alimentarius regulations** for safety and quality production

Research And Development Analyst (Intern)@ Food Research Institute Accra, Ghana :12/2016-06/2017

➢ *Duties performed:*

- Usage of **LC-MS for the separation, identification, and quantification of compounds** in selected food products • Analysed proximate composition (e.g., Moisture, Crude fats, Ash, Protein) & Titratable Acidity of food products
- Research on **new food product** on the market.
- **Trained sensory panellist to perform an evaluation** based on the sensory descriptive test.

LANGUAGE PROFICIENCY

- Mother tongue(s): **Akan language- local dialect**
- **English language- Full professional proficiency level**
- Other language(s): **Italian- Intermediate level**

EXPERIMENTAL RESEARCH/PUBLICATIONS

2019-2025

1. Abraham Badjona, **Reindorf Boateng**, Robert Bradshaw, Caroline Millman, Martin Howarth, Bipro Dubey: A comprehensive guide for characterization of next-generation plant-based proteins: Theory and application ***(submitted to comprehensive Reviews in Food Science and Food Safety).***
2. **Boateng R**, Maria, B.V, Faieta M, Pittia, P. Carlos Alberto, G.G. Ball milled starch aerogel structures as novel additive for food applications. Food hydrocolloid ***(under submission).***
3. **Boateng R**, Faieta M, Pittia, P. Ball milling: green approach for improving the technological performance of starch from different botanical sources. Food hydrocolloid ***(under submission).***
4. **Boateng R**, Cecilia A.O, Faieta M, Pittia, P: Effect of ball milling treatment on technological performance of starch: impact of processing parameters on the botanical origin. Food chemistry ***(Under submission).***
5. **Boateng R**, Faieta M, Pittia, P. Corn starch modification by planetary ball milling: elucidating the effects on rheological properties. Carbohydrate Polymers ***(under submission).***
6. **Boateng R**, Francis Alemawor, John Barimah and David Ben Kumah. Influence of Drying on the Phytochemicals and Antioxidant Properties of Bombax buonopozense (Gold Coast Bombax) Sepals. American Journal of Food Science and Technology. 2019; 7(2):45-51.
7. Danso J, Alemawor F, **Boateng R**, Barimah J and Kumah D. Effect of drying on the nutrient and antinutrient composition of Bombax buonopozense sepals. African Journal of Food Science and Technology. 2019; 13 (1):21-29.
8. Eugenia A. Asamoah, John Barimah, Worlah Y. Akwetey, **Boateng R**, Charles C. Dapuliga, Sensory and Physicochemical Characteristics of Rabbit Meat Sausages Produced with Refined Palm Stearin (RPS) (2019) SDRP Journal of Food Science & Technology 4(5).

CONFERENCES & SEMINARS

2017 – 2025

1. **Boateng R**, Faieta M, Blanco-Vales M, García-González Carlos A, Pittia P. From Granules to Gels: Exploring physical and technological properties of ball-milled starches from different origins. 39th EFFOST International Conference: Fostering the Transition to Sustainable Food Systems: Embracing Novelty and Overcoming Challenges, Porto (Portugal), 17-19th November 2025. Book of abstracts **(Oral presentation).**
2. **Boateng R**, Faieta M, Pittia P. From Granules to Gels: Exploring the physical, structural and technological properties of ball-milled starches from different botanical origin. 29th Workshop on Italian PhD Research on Food Science Technology & Biotechnology, Teramo (Italy), 08-12th September, 2025. Book of abstracts **(Oral presentation).**
3. **Boateng R**, Faieta M, Pittia P. From Granules to Gels: Exploring the physical, structural and technological properties of ball-milled starches from different botanical origin. 2nd PhD annual meeting, Teramo (Italy), 12th September, 2025. **(Oral presentation).**
4. **Boateng R**, Faieta M, Pittia P. Ball milled starch aerogel structures as novel additive for food applications. National conference on food science and technology - Foods of the future (SISTAL), Bologna, (Italy), 0911th June, 2025. Book of abstracts **(Poster presentation).**
5. **Faieta M**, Boateng R, Lilia N, Pittia P. Ball Milling as a green mechano-chemical technology for tuning technological functionality of starches of different botanical origin. Foods of the future (SISTAL), Bologna, (Italy), 09-11th June, 2025. Book of abstracts **(Oral presentation).**
6. **Boateng R**, Faieta M, Pittia P. Effect of ball milling as a green and sustainable technique on the techno functionality of tapioca starch. ILSI Europe Annual Symposium 2024 and Early Career Scientists Event, DTU university, Lyngby, (Denmark), 26-27th November, 2024. Book of abstracts **(Poster presentation).**
7. Faieta M., **Boateng R,** Di Mattia C.D, Di Michele A, Pittia P**.** Developing new technological functionalities of starch by ball milling for innovative food structures. 6th Food Structure and Functionality Symposium, Bruges (Belgium), 6-9th October, 2024. Book of abstracts **(Poster presentation).**
8. **Boateng R**, Faieta M, Pittia P. Effect of ball milling treatment on technological performance of starch: impact of processing parameters on the botanical origin. 1st PhD annual meeting, Teramo (Italy), 24th September, 2024 **(Poster presentation).**
9. **Boateng R**, Faieta M, Pittia P. Effect of ball milling treatment on technological performance of starch: impact of processing parameters on the botanical origin. 28th Workshop on Italian PhD Research on Food Science Technology & Biotechnology, Catania (Italy), 18-20th September, 2024. Book of abstracts **(Poster presentation).**
10. **Boateng R**, Faieta M, Lilia N, Pittia P. Ball Milling as a green mechano-chemical technology for tuning technological functionality of starches of different botanical origin. 22nd World Congress of Food Science and Technology in Rimini (Italy), 8-12th September, 2024 **(Oral presentation).**
11. Faieta M, Boateng R, Lilia N, Pittia P. Innovative funzionalità tecnologiche di amidi sottoposti a trattamento di macinatura a sfere (ball-milling). Transition to a sustainable food system (SISTAL), Bari, (Italy), 12-14th June, 2024. Book of abstracts **(Oral presentation).**
12. **Boateng R**, Faieta M, Di Mattia C, D'Alessio G, Pittia P. Techno-functional properties of starch of different botanical sources as affected by ball milling. 19th Food Colloids Conference, Thessaloniki (Greece), 1418th April, 2024. Book of abstracts **(Poster presentation).**

13. **Boateng R**, Faieta M, Pittia P. Physical properties of cryogels obtained by ball-milled starch as novel βcarotene carrier. 37th EFFOST International Conference, Valencia (Spain), 6-9th November 2023. Book of abstracts **(Oral presentation).**
14. **Boateng R**, Faieta M, Pittia P. Innovative Starch Ingredients and their applications for Food Structuring and Delivery systems. 27th Workshop on Italian PhD Research on Food Science Technology & Biotechnology, Napoli-Portici (Italy), 12-15th September, 2023. Book of abstracts **(Poster presentation).**
15. **Boateng R**, Alemawor F, Barimah J, Kumar B. Impact of drying methods on the nutritional components of red silk cotton plant. 6th Ghana Science Association Conference, KNUST college of science auditorium (Ghana), 11th April 2017. Book of abstracts **(Poster presentation).**
16. Danso, J, **Boateng R**, Alemawor F, Barimah J, Kumar B. Effect of drying on the proximate composition and anti-nutrients of red silk cotton plant. 7th Ghana Science Association Conference, KNUST college of science auditorium (Ghana), 17th April 2018. Book of abstracts **(Poster presentation).**
17. **Boateng R**, Alemawor F, Barimah J, Kumar B. Effect of drying on the phytochemicals and antioxidants of red silk cotton plant. 8th Ghana Science Association Conference, KNUST college of science auditorium (Ghana), 5th May 2019. Book of abstracts **(oral presentation).**

PERSONAL ACHIEVEMENTS

- Awarded the **third place** out of **400 participants** of the Italian Network of the PhD Courses in Food Science, Technology and Biotechnology and Cluster Agrifood Nazionale CL.A.N 9th Edition of the "What for" Award. 10-12th September 2025.
  - The Award is aimed at promoting awareness among young researchers of the effects of the application of the research carried out by them and the ability to communicate, in a synthetic and effective way, how to promote technological transfer.
- **Awarded a short-term contract for the tutoring master and bachelor student** in the department of bioscience, food and environment at the university of Teramo
- **Tutored and supervised four Erasmus master's students from France and one bachelor's student from Italy in the bioscience laboratory at the University of Teramo.** *Their research projects focused on starch-based systems, including structural modification, functional characterization. I provided hands-on guidance in experimental design, analytical techniques, and scientific reporting, fostering their understanding of starch chemistry and its role in innovative food technologies.*
- Achieved Certification- Data Science Orientation: 15/01/2024 – 02/02/2024.
- **Won scholarship that worth 50, 000 euros** for my 3 years PhD in food science @University of Teramo, Italy- (01/11/2022-30/10/2025).

  – This research was funded by the European union- Next generation EU. Project code: ECS00000041; Project CUP: C43c22000380007. Project title: innovation, digitalization, and sustainability of diffused economy in central Italy Vitality PhD project.
- **Awarded a grant that worth 4,200 euros** for 6 months Erasmus Traineeship program to Spain. University in charge of the disbursement is the Universita Politecnica delle Marche, Ancona, Italy- (01/11/202107/05/2022).
- **Won scholarship that worth 12, 000 euros** for my 2 years master degree in Food innovation and beverage management (Ancona, Italy- 01/10/2019- 14/10/2021).

  – This scholarship was funded by For Linking Overseas Relations (FLOR), reserved to international students.

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- **Awarded one-year full time contract** as a teaching and research assistant in the department of food science and technology @ Kwame Nkrumah university of science and technology, Kumasi-Ayeduase, Ghana- (09/2018-08/2019).
- **Won the student representative council-Ketewa Biaa Nsua bursary (SRC-KBN)** during undergraduate at (Kwame Nkrumah University of science and Technology, Ghana- (05/10/2017)
- **Beneficiary of UniCredit bank scholarship** during undergraduate @ Kwame Nkrumah University of science and Technology, Kumasi-Ayeduase, Ghana- (10/04/2016).

AQUIRED KNOWLEDGE & TECHNIQUES

- *Operated the supercritical CO_2 drying equipment for drying of gels*
- *Operated the pycnometer and N_2 adoption BET surface instrument for analysing samples*
- *Evaluated particle size distribution using the master sizer*
- *Modified starches using physical techniques (Ball milling)*
- *Developed and designed food structures for encapsulation*
- *Determined peroxide value of Pilchard Sardines*
- *Operated the cold plasma equipment to generate plasma activated water (PAW) as a pre-treatment for Sardina pilchardus fillets.*
- *Proximate composition determination of Gari, ginger drink, and maize grits*
- *Examined the microbiological quality of 'Waakye' (Rice and Beans) with its accompaniment ('Shito', Salad, 'Gari', Stew, & macaroni)*
- *Demonstrated the use of the drying process and the need to pre-treat food materials to obtain preservable food materials (Cassava, Yam, and Pepper)*
- *Food product development and sensory evaluation on high-quality cassava salad cream and ring doughnuts*
- *Participated in the research on the effect of storage conditions on egg-plant*
- *Participated in the research on the Production of Plantain Yogurt*
- *Investigated heavy metals content in the 'Gari' produced by the processing industry in Anloga-Kumasi.*

VOLUNTEERING ACTIVITIES

- *As part of a focus group for descriptive sensory evaluation on different formulation trails on pasta al forno* - 10/2025 – 10/2025, Dept. bioscience, UNITE, Italy
- *Human subject for pea invitro digestibility studies* - 06/2024- 07/2024- University of Teramo (UNITE),
  - Italy.
- *As part of a focus group for descriptive sensory evaluation on modified and native pea protein as an alternative ingredient for ice cream*- 10/2024 – 11/2024, Dept. bioscience, UNITE, Italy
- *As part of a focus group for descriptive sensory evaluation on protein burgers for company* – 02/2024 03/2024, Dept. Bioscience, UNITE, Italy
- *Descriptive sensory evaluation on mussles*- 10/2023 – Dept. Bioscience, UNITE, Italy
- *Human subject for Yam Project for Testing Blood Sugar Levels* -12/03/2018 – 15/03/2018 KNUST-forig, Ghana
- *Human subject for bread made with turkey berry project* 10/08/2016 – 12/08/2016 KNUST, Ghana
- *Human subject for High Quality Cassava Bread Project for Testing Blood Sugar Levels in the Glycemix Index In vivo* 14/06/2016 – 24/06/2016 KNUST-forig, Ghana

23/10/2025, Teramo

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