PROJECT TITLE: PEANUT AND COW'S MILK ORAL IMMUNOTHERAPY FOR FOOD ALLERGY IN CHILDREN

NAME AND COUNTRY: SOFIA CARRERAS KATCHEFF; BARCELONA (SPAIN)

TYPE, DURATION AND LOCATION OF FELLOWSHIP: CLINICAL FELLOWSHIP; 3 MONTHS; LONDON

HOST INSTITUTION AND SUPERVISOR NAME: ST MARY'S HOSPITAL (IMPERIAL COLLEGE HEALTHCARE NHS TRUST); DR PAUL J TURNER

During the three-month fellowship at the Children's Clinical Research Facility (CCRF) of St Mary's Hospital in London, I had the opportunity to immerse myself in the care and management of paediatric patients undergoing food allergy evaluation and oral immunotherapy, with a particular focus on peanut desensitization. This training complemented my previous experience with milk and egg oral immunotherapy in my home institution, allowing me to broaden my clinical and research competencies in a setting with high-level expertise in peanut allergy.

My daily activity, approximately 7-8 hours per day, was distributed between oral food challenges and immunotherapy procedures under close supervision, as well as outpatient clinics and follow-up visits, particularly during the 10 to 12 hours a week I spent in ambulatory care. I was actively involved in the initial clinical assessment of children undergoing food challenges, including history taking, physical examination, skin testing, spirometry, and safety preparation. Throughout the fellowship, I had the chance to observe the execution of oral and epicutaneous desensitization protocols, gaining exposure to both investigator-led and commercial clinical trials. I witnessed how acute allergic reactions were managed and discussed treatment adaptations based on the patient's clinical and molecular sensitization profiles.

My role extended beyond observation. I was trusted with responsibilities related to patient monitoring during challenges, documentation of clinical responses, and maintaining compliance with Good Clinical Practice standards. I became familiar with safety protocols and risk management strategies during immunotherapy escalation phases. A particularly enriching aspect was learning how to critically evaluate the criteria for selecting patients eligible for OIT and understanding the clinical reasoning behind each therapeutic decision.

During outpatient clinics, I participated in the evaluation and follow-up of paediatric patients with complex atopic comorbidities, including severe atopic dermatitis, asthma, and allergic rhinitis. In addition, I had the opportunity to observe and discuss the management of children with underlying immunodeficiencies, which broadened my understanding of clinical approaches in immunologically vulnerable populations.

During my time During my time at St Mary's, I had the chance to initiate two research projects. The first was an exploratory study in the field of anaphylaxis, aimed at investigating the potential role of lactic acid and lactate in its pathophysiology. Some evidence suggests that lactate, which increases during systemic allergic reactions, might play a modulatory role in mast cell activation, possibly through a negative feedback mechanism. To explore this hypothesis, we performed skin prick tests in sensitized individuals using allergen extracts mixed with both lactic acid and sodium lactate at different concentrations, to assess whether these compounds interfered with wheal formation. This preliminary work lays the foundation for future research evaluating the clinical relevance of lactate as a modulator in anaphylaxis.

The second project was a study focused on evaluating the diagnostic performance of different skin prick test (SPT) measurements in predicting clinical reactivity to peanut. For this project, we constructed a database by extracting and organizing SPT and food challenge data from several clinical trials conducted at the center. The objective was to compare the diagnostic utility of various SPT parameters—longest diameter, mean diameter, and wheal area—in predicting outcomes during double-blind placebo-controlled food challenges. This analysis, conducted using ROC curve methodology, aimed to identify the most reliable and reproducible SPT metric for clinical use.

Although no formal publication has been completed during the fellowship period, I am currently preparing to present preliminary findings from the skin prick test diagnostic study at the 2025 Spanish Allergy and Immunology Congress (SEAIC), pending abstract acceptance. Any future presentations or publications derived from the work carried out or the clinical experience gained at St Mary's will be shared with the EAACI team and will include proper recognition of the host team's support and contribution.

The goals I had originally set for this rotation have been fully met. I have significantly expanded my understanding of how to implement and evaluate OIT protocols for peanut and cow's milk allergy, especially in young children. I have strengthened my capacity to contribute to the design and interpretation of clinical trials and deepened my knowledge of food allergy immunopathology. The training I received is already proving valuable as we begin to refine and expand our recently launched peanut immunotherapy program in Barcelona, with future plans to evaluate its effectiveness in relation to different sensitization patterns and potential cross-desensitization to other nuts.

This experience surpassed expectations in terms of both clinical depth and academic interaction. The insights gained from working closely Dr Turner's team and engaging in multidisciplinary discussions have shaped my approach to complex cases and have highlighted the importance of evidence-based personalization in immunotherapy.

Reflecting on the experience, I feel deeply grateful for the warm welcome and mentorship provided by Dr Paul J. Turner and Dr Nandinee Patel. Their willingness to involve me in meaningful tasks, explain clinical reasoning, and share their research perspective made this experience both practical and inspiring. I would also like to thank the nursing staff and the entire team at the CCRF for their kindness, professionalism, and collaboration.

This fellowship has reinforced my passion for paediatric allergy and confirmed my dedication to pursuing excellence in both clinical care and research. It has also highlighted the value of international collaboration and the importance of seeking training in reference centers with advanced experience. I return to my hospital with a renewed sense of purpose, motivated to improve patient care through the integration of everything I have learned and eager to contribute to the future of immunotherapy in our region.