# Department of Chemistry Departmental Seminar | Analytical Chemistry | Human Skin Sebum, Odour and Disease explored with Chromatography-High Resolution Mass Spectrometry

### You are cordially invited to a lecture presented by

# Dr. Drupad K. Trivedi



Community of Analytical and Measurement Sciences Lecturer, The University of Manchester, UK

Date:	Thursday, 20 March 2025
Time:	11h30 – 12h30
Venue:	The Orbital, Room 3-1 Chemistry Building
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# Human sebum consists of a very well-defined set of chemicals and plays a pivotal role in maintaining healthy skin

### Abstract

While this is true and what we have known for many decades, we are set to investigate more about this information rich chemical reservoir. Using the modern approaches to study skin chemistry in interdisciplinary fashion has led us to understand the function of sebum beyond skin health. We are now exploiting this to study disease onsets, therapeutic efficacy and human scent. In this talk, I will show our approach to understanding sebum chemistry in health and disease. While my group's focus is lung disease, we have shown that human skin sebum changes as a function of health status in Parkinson's disease, REM sleep behaviour disorder and COVID-19 – a very broad range of disease conditions. I will show data indicating it is not only sebum that changes along with it, how our bodies smell and how we are uncovering the role of human sebum in this phenomenon.

We explore the metabolome and volatilome of this biofluid using high resolution mass spectrometry coupled to liquid chromatography and thermal desorption gas chromatography. We investigate the role of odourous volatiles and with the help of human super smeller, in real time, understand the

mass spectrometry data that can be associated with disease odours. We also push the boundaries of mass measurements to discover shapes of differential molecules using ion mobility experiments. I will share with you my vision and potential of sebum studies in disease detection in the masses globally.

## **Biography: Dr. Drupad Trivedi**

In 2020, Dr. Drupad Trivedi was awarded a Lectureship at the University of Manchester, funded by the Community of Analytical and Measurement Sciences (CAMS), an industry-led UK network. At the University of Manchester, he is currently a core PI within the Michael Barber Centre for Collaborative Mass Spectrometry (MBCCMS), leading data-driven metabolomics for clinical studies. His group collaborates across four different continents with experts in metabolomics and clinicians to address global health challenges while elucidating the relationship between microbial secretions on the skin and endogenous metabolic pathways. He also serves as Chair of the Data Analytics theme with CAMS, leading policy discussions and shaping effective industry-academic collaborations for analytical data standards within the UK.

Dr Trivedi published the first metabolomics paper in the field in 2019 in ACS Central Science, which has received over 175 citations. His recent review describing a century-long development in sebum sampling and extraction of relevant metabolites was awarded second place in MetaboPrize2023 by the journal Metabolomics. He is a member of the Royal Society of Chemistry, British Mass Spectrometry Society, and Metabolomics Society, and serves as a trustee of the Analytical Chemistry Trust Fund in the UK and Chair of Data Analytics within CAMS, UK. His contributions have significantly advanced the understanding of changes in the chemical composition of sebaceous secretions and their association with diseases such as Parkinson's disease, Tuberculosis, COVID-19, and REM sleep behaviour disorder.

Dr Trivedi received the RSC Horizon Prize in 2020 for his contributions to the discovery of odorous compounds in Parkinson's disease, utilizing sebum metabolomics methods. Dr. Trivedi currently has active research focuses on development of a cross-continent metabolomics and olfaction network. He has contributed over 60 published research outputs in metabolomics, which have been cited over 2400 times. Dr. Trivedi co-founded Sebomix Ltd., a spin-out company that develops methods for 'sebomics' to study mechanisms involved in these diseases.

#### https://about.me/drupadtrivedi

https://cams-uk.co.uk/is-uk-analytical-data-science-drowning-in-information