

The Medical Sciences Historical Society held its Spring meeting in March and Professor Paul Davis provided an overview of the latest advance in allergy testing and of Carl Prausnitz's contribution to the early understanding of allergic reactions. Harold Wingfield reports.

Carl Prausnitz and the mysteries of allergy

At the Spring meeting of the Medical Sciences Historical Society (MSHS) Professor Paul Davis, an MSHS member, stepped in at short notice to give a fascinating presentation on his work on allergy and on the work of Carl Prausnitz (1876–1963), who has been described as the ‘father of clinical allergy’.

Early reaction

In 1921, Prausnitz was working in Breslau, then part of Germany, when he published the first reference to the existence of so-called ‘reagin’ antibodies. His colleague, Kustner, was hypersensitive (allergic) to cooked fish, and extracts of fish, diluted many times over and injected into Kustner’s skin, produced large characteristic wheals that are typical for allergic people.

Prausnitz then went one step further when he induced skin allergy in non-allergic people. He did this by diluting Kustner’s serum and injecting it into marked sites on the arm of a non-allergic person. Then he injected small amounts of fish extract into the marked sites and also into clear areas of the skin. All the marked sites that contained a small quantity of Kustner’s serum produced large, characteristic allergic reactions with reddening and swelling. However, skin areas that had not been injected with Kustner’s serum showed no allergic reaction.

‘The Prausnitz-Kustner test is highly sensitive and can detect very small amounts of reagin’

‘The compound that bees use in their detection system has been synthesised and stabilised for use in *in vitro* kits’

This pioneering work demonstrated that allergic sensitivity could be induced in non-allergic people, and is the basis of the Prausnitz-Kustner test that is a highly sensitive biological test able to detect very small amounts of reagin. Some 45 years later, reagin was defined as an IgE class immunoglobulin that interacts with specific antigens to induce the release of histamine and other vasoactive amines. Hence the large red, swollen wheals formed on the skin.

In 1933, Prausnitz moved to England because, being partly Jewish, he saw no future for himself in National Socialist Germany. He became a general practitioner in Ventnor on the Isle of Wight (his mother’s birthplace) in 1935 and four years later he adopted his mother’s maiden name, Giles. He remained in Ventnor for the rest of his life, becoming the family doctor for Paul Davis and his family. He was a well-respected and much-loved local GP. The headstone on his grave at Bonchurch is inscribed with the words ‘Beloved physician’.

A sensitive ‘nose’

Paul Davis then moved on to the present day. His research team has been working on the isolation of the specific chemicals involved in allergic reactions. With further knowledge about this process, the team has created *in vitro* test kits that can detect minute amounts of reaction and thus identify specific agents.

The group has drawn on the abilities

of some animals and insects to be able to detect minute amounts of substances, and the tests have the same action as ‘sniffer dogs’ searching for drugs. Insects have highly sensitive scent organs and bees can detect pollen over three miles away. Furthermore, bees have been trained to detect minute traces of TNT.

Back in the laboratory, Davis’s team has isolated the compound that bees use in their detection system. It has been synthesised and stabilised so that it can be used in *in vitro* kits to detect other reactive molecules. Clearly, this is a major breakthrough and much care and time is being put into patent protection before more information is released.

The audience appreciated being told of this cutting-edge technology and the exciting possibilities for its use. Carl Prausnitz would be proud to know that his work of over 80 years ago has stimulated such advanced technology, and he would be very proud that the young boy he treated as a GP had remembered his research and had pushed it forward towards new frontiers of knowledge.

The MSHS annual general meeting will be held at 2.00 pm on 18 March at the IBMS office. This will be followed at 3.00 pm by *Today’s Medicine – Tomorrow’s History*, given by Dr Tilli Tansey.