



# ISNS

International Society for Neonatal Screening

## *In Memoriam*

### **Professor Louis Isaac Woolf, BSc, PhD, University College London**

24 April 1919 – 7 February 2021

Professor Louis Isaac Woolf died from a heart condition aged 101 on 7 February 2021 in Vancouver, Canada. He is best known for developing his concept of a dietary treatment for phenylketonuria, PKU, based on a phenylalanine - depleted acid treated casein. He was a biochemistry Research Fellow at Great Ormond Street Hospital, GOSH, in London in the late 1940s. At that time the general opinion was that PKU was untreatable. Working with paediatrician David Vulliamy who was caring for a patient with PKU they disagreed. They suggested that phenylalanine or one of its metabolites was toxic to the brain and that the learning difficulties could be relieved by reducing the concentration of phenylalanine in the blood.

Dietary restriction of phenylalanine could be a practicable way. In what might now be considered translational research, a bridge between science and clinical practice, Louis had a 'light bulb' moment at a science meeting in which a more economical amino acid growth medium for a bacteriological test was proposed during a discussion. Individual, pure amino acids were expensive at that time whereas amino acids produced from hydrolysing protein with acid were much less so. Selective removal of phenylalanine and some other amino acids from the protein hydrolysates by treatment with charcoal was described at the meeting. Louis thought that by adding in other essential nutrients this could form a suitable protein substitute food for PKU patients to lower the abnormally high phenylalanine concentration in their bodies and test the supposition that this was the main cause of their disabilities.

Louis was unsuccessful in persuading paediatricians at GOSH to trial this. However, the German Dr Horst Bickel who visited with Louis on various occasions was receptive although allegedly sceptical at first. He had a suitable young patient at Birmingham Children's Hospital to trial this treatment with and it was successful. This was a world first and a lasting legacy of Louis' broad thinking and collaborative nature.

Less well known is Louis' conviction that newborn screening would likely improve outcomes in PKU by allowing earlier treatment. Urine testing appeared a simple and non-invasive way to do this. He discussed this with Senior Medical Officer in Public Health, Dr Nancy Gibbs, from Wales at a chance





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meeting in London. This led to the first community based screening programme of the general newborn population aimed at detecting all cases of PKU in a cohort of babies in Cardiff from 1958 to 1959. This was another world first soon to be followed by similar programmes in England, Scotland and Northern Ireland.

Dr Federico Mayor Zaragoza from Granada, Spain met Louis in 1959 when Louis was working in Oxford, and Mayor Zaragoza was on a sabbatical there. Louis was highly influential and supportive of Mayor Zaragoza's endeavour to commence newborn screening for PKU in Granada. This eventually began in 1968 with chromatography of urine.

From evaluation of the early UK screening schemes it became apparent that urine testing was not sufficiently reliable in detecting all cases of PKU. Louis was a member of 2 working parties reporting to the UK's Medical Research Council on detection and treatment of PKU in 1963 and 1968. The conclusion and recommendation of the expert groups was that blood analysis with the heel prick test was more satisfactory.

By the late 1960s Louis' published work had become noticed internationally and in 1968 he was offered a post as Associate Professor in the Kinsmen Laboratory of Neurological Research at the University of British Columbia which he took up. He was promoted to Professor 6 years later in 1974 and with over 120 papers to his name, contributions to books and conferences he retired in 1984 after a 16 year teaching and research career there.

A shy and modest man Louis was devoted to his family. His wife Frances died in 1991 and Louis is survived by his only daughter Lesley, grandsons Benjamin and Oliver and his youngest brother, Henry. He was beautifully spoken in an old-fashioned British way with an astonishing memory to the end. Generous to people who criticised him he quietly stood his ground, recognising that valid debate is integral to scientific discovery. And - like many another innovative scientist - it is in this way that he triumphed over sceptical adversity to leave a legacy in pioneering the successful treatment of PKU.

Louis asked that there should be no funeral and in lieu of flowers that people might make a donation to CARE, Canada.

Kate Hall, February 2021

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