

## Łucja Frey-Gottesman – discoverer of Frey's syndrome and her tragic fate

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Łucja Frey's life was complex and her fate unclear. Particularly the final period of her life, when she stayed in the Lvov Ghetto during WWII, is mired in many unknowns. It has not been possible to ascertain either the date or the circumstances of her death. It is not known whether she perished in the ghetto or was deported to the death camp at Belzec, where she eventually died. Equally uncertain is the fate of her family. Łucja Frey, an outstanding neurologist, authored a number of scientific publications and, most importantly, described the auriculotemporal syndrome which is known worldwide as Frey's syndrome. Multiple attempts have been made to reconstruct her biography. In 2004 in Germany Mirjam Moltrecht wrote an extensive 106-page long doctoral thesis entitled *Łucja Frey – Rekonstruktion eines Lebens*. While preparing her dissertation, the author collected all materials available in literature on Łucja Frey's scientific output, progression of her professional career and biography. The compilation of biographical information, however, proved a daunting task. Therefore, she contacted over 100 different institutions, requesting access to whatever materials they had about Łucja Frey. As Moltrecht herself specifies, she forwarded her request to universities, libraries, medical societies and associations in Poland, Ukraine, Austria, Russia, USA, Israel, UK and Germany. She also contacted Jewish scientific and research institutes, the Yad Vashem Institute, Holocaust research centres and other organizations. She obtained valuable materials from only five institutions.

Her subsequent dissertation was abridged in collaboration with Olaf Michel and published under the title *The Woman behind Frey's Syndrome: The Tragic Life of Łucja Frey* [2]. Both these works were a basis for this study [1,2].



Fig. 1. Łucja Frey in 1918

### Biography

Łucja Frey was born in Lvov on 3 November 1889 as a daughter of Szymon Symcha Frey and Dina née Weinreb. Her father was a building contractor and her mother did not work outside the house. They were a relatively affluent family of assimilated Jews. They spoke Polish at home and Łucja gave Polish as her mother tongue. She began education in a Catholic primary school run by Benedictine nuns, which she attended in 1896-1900. After finishing primary education she was admitted to Józefa Goldblatt-Kamerling's Jewish grammar school for girls, graduating in 1907. In the same year she successfully passed her final secondary school examination (matura) as an external student at the Franciszek Józef state grammar school. She subsequently enrolled at the Lvov University's faculties of philosophy and mathematics. She studied mathematics (1908-1912) under Prof. Marian Smoluchowski, an eminent mathematician. In her handwritten curriculum vitae Frey wrote that in 1913 she passed her teaching examinations qualifying her to teach mathematics in secondary schools. She then took up medical studies at the Lvov University. This happened most probably in 1917, however archive materials differ as to the exact date. She interrupted the studies in 1918 because of unstable political situation in Lvov caused by the Polish-Ukrainian War. When the political scene stabilized in 1919, she was granted Polish citizenship. Before that time, similarly to the majority of population inhabiting areas which were under Austrian rule following the partitions of Poland, she was formally an Austrian citizen. During that period, whilst still a medicine student, she worked under the supervision of Prof. Kazimierz Orzechowski at the neurology and psychiatry department of the State Hospital in Lvov. In 1920, Prof. Orzechowski was appointed Head of the

newly established Chair and Department of Neurology in Warsaw and probably offered Łucja Frey further collaboration in Warsaw. Frey decided to change university and after several semesters in Lvov she relocated to the Warsaw University to complete her medical school education. She graduated in 1921, passing her final examinations with flying colours, earning 'very good' and 'excellent' grades. She received her medical diploma in 1923, at the age of 34. During the entire period spent in Warsaw, also during her studies, she worked at the Neurology Department under Prof. Orzechowski – initially as a junior assistant and then, after graduation, as a senior assistant. She even lived in the Neurology Department building, at the Infant Jesus Hospital at 59 Nowogrodzka Street, contributing her whole time, tireless energy and effort to scientific pursuits. All of her publications and her whole scientific output come from that productive period spanning essentially just a few years, between 1923 and 1928. Frey's accomplishments as a medical scientist are discussed below. In 1929 Łucja Frey left Warsaw to return to Lvov. The decision appears to have been motivated by personal reasons, because it is at that time that she got married to Marek Gottesman, a lawyer with whom, it seems, she had been in a relationship for many years. One year later, in 1930, she gave birth to a daughter named Danuta. According to the testimony given by Łucja Frey's sister-in-law Hedwa Balat (née Gottesman) at the Yad Vashem in 1955, Danuta was Frey's second child: she and Marek Gottesman supposedly had a son, Jakub, born in 1919. Nothing is known of the fate of her alleged son, though. In 1929 Frey started working as a medical practitioner at the Jewish Religious Commune's Hospital in Lvov and as a senior consultant at the neurology clinic in Lvov. The outbreak of WWII caught her in Lvov. On 19 September 1939, Soviet troops entered the city beginning the period of Soviet occupation. Łucja Frey's husband Marek Gottesman was soon arrested under accusations of anticommunist activity, never to be heard from again. No information has been uncovered about what happened to him afterwards. On 30 June 1941 the German army captured Lvov and Łucja Frey was relocated to the ghetto. She continued working as a doctor at the 2nd Clinic of the Jewish Hospital (II Ghettopoliklinik). The last recorded evidence of Frey's existence bears the date of 1 April



Fig. 2. Łucja Frey from the period spent in the ghetto in 1941

1942. It is an official personal questionnaire with the number 144, issued by the German authorities and filled in for the purpose of obtaining a work permit. The document was a 'green card' giving some hope of survival. On 20 August 1942, however, nearly all the patients and staff members of the ghetto's clinic, approximately 400 people in total, were murdered. Łucja Frey may have been one of them. Even if she survived, in August 1942 she was probably deported to the Belzec concentration camp, where she died. The final liquidation of the Lvov ghetto was performed by the Nazis in June 1943 and hence some sources give 1943 as the year of Łucja Frey's death [3,4]. Nothing is known for certain of what happened to members of her family: her husband, daughter Danuta, alleged son Jakub, parents and in-laws.

## Scientific achievements

The first recorded information written in memory of Łucja Frey-Gottesman comes from 1950. It is Eufemiusz Herman's *In Memoriam* published in *Neurologia Polska* [Polish Neurology] [3]; Herman's book *Neurologia Polscy* [Polish Neurologists] published in 1958 also contains a chapter devoted to Łucja Frey. Herman describes Frey's personality in the following manner: 'Extraordinarily modest, quiet and as hardworking as an ant, she was distinguished to no mean extent by innovative creativity. All her research works were characterized by an exceptional accuracy, a seeking for a wide and versatile understanding of the problem under study as well as a deep knowledge of her subject. The best proof is her work devoted to the auriculotemporal syndrome. The work helped Frey, a young neurologist at the time, to make a name for herself in international neurology (1923)'. Łucja Frey's scientific legacy is not large, encompassing just 43 studies published in Polish and foreign (French) journals. All of them come from the relatively short period (1923-1928) when she worked in the Warsaw University's neurology department. After that time, which was marked by intensive commitment to academic excellence, she returned to Lvov, where she was mainly preoccupied with her medical practice. And then the war and German occupation came...

The best known of Łucja Frey's works concern the auriculotemporal syndrome she described. It involves

reflexive disorders of the sweat secretion and vasomotor systems affecting the face, resulting from innervation of the damaged auriculotemporal nerve. While eating sour, bitter, hard or hot foods, patients affected by the syndrome experience heavy sweating and flushing localized in one half of the face. The likely cause of the condition is auriculotemporal nerve damage in the parotid salivary gland due to inflammatory process, post-inflammatory scar formation, injury or surgery of the salivary gland [4]. Even though descriptions of these symptoms had been published in medical literature before Frey's first publication (Kastremsky 1740, Dupuy 1816, Brown-Sequard 1849, Botkin 1875 and others), the accounts were fragmentary and failed to analyze the possible pathomechanism underlying the condition, gustatory sweating in particular [5]. Frey's *Le Syndrome du Nerf Auriculo-Temporal* is thus considered to be the first presentation of the syndrome in international medical literature [6]. Frey's name was first used as the eponym for the syndrome by Higier (1926) and Bassoe (1932), who stressed the fact that Frey was the first to note that it was a consequence of damage to both sympathetic and parasympathetic innervations [5]. Knowledge of the syndrome is important both for neurologists, laryngologists and surgeons. Also valuable is Frey's set of works on brain stem topography, demonstrating her deep knowledge of anatomical and histopathological structures of the nervous system, and contributing new data to known anatomoclinical correlations. Another study, performed in collaboration with Kazimierz Orzechowski and devoted to anatomical changes in Charcot's disease (1925), deserves a special mention. The authors showed that histological lesions present in amyotrophic lateral sclerosis are identifiable in various areas of the cerebral cortex, not only in the motor cortex. They are particularly pronounced in the deep cortical layers V and VI. In the spinal cord such changes are found throughout the entire grey matter, including gelatinous matter. Based on their own research, the authors proposed a hypothesis of toxic or inflammatory aetiology of the disease [4]. Frey's contribution to medical science also includes works on the effect of plant poisons on the development of fibrillation and degenerative changes in the spinal cord, case descriptions of aneurysm of the arterial plexus of the spinal cord, cysts of the third ventricle, clivus tumours, frontal lobe tumours, retrosplenial tumours of the corpus callosum and more. Together with neuropathologist Adam Opalski, Łucja Frey also published a paper on hereditary diseases of the nervous system [7]. As Prof. Eufemiusz Herman notes in his book: 'Al-

though the scientific legacy of Łucja Frey is not extensive, each of her publications is of great scientific value and left a lasting mark on the worldwide scientific progress'. [4]

## References

1. Moltrecht M. Łucja Frey – Rekonstruktion eines Lebens, Dissertation an der Medizinischen Fakultät der Universität Leipzig, 21 Dezember 2004
2. Moltrecht M., Michel O. The woman behind Frey's syndrome: the tragic life of Łucja Frey. *Laryngoscope* 2004; 114: 2205-2209.
3. Herman E. Wspomnienie pośmiertne. *Neurol Pol* 1950; 24: 27-28.
4. Herman E. *Neurologia polska. PZWL, Warszawa* 1958, pp. 225-227.
5. Wikipedia, free encyclopaedia, Łucja Frey-Gottesman. [http://pl.wikipedia.org/wiki/%C5%81ucja\\_Frey-Gottesman](http://pl.wikipedia.org/wiki/%C5%81ucja_Frey-Gottesman).
6. Frey L. Le syndrome du nerf auriculo-temporal. *Rev Neurol* 1923; II: 97-104.
7. Frey Ł., Opalski A. Przyczynki kliniczne do studjum nad schorzeniami dziedzicznymi układu nerwowego. *Pol Gazeta Lek* 1927; 15: 277-280.