

Marie Skłodowska-Curie

Pioneer of Medical Physics and inspiration for women scientists

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IOMP Women Group
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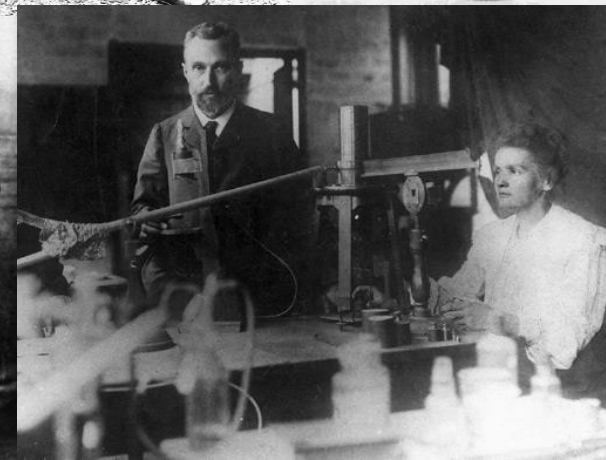


Marie Skłodowska-Curie (1867-1934)

International Organization for Medical Physics



Women Group



Marie Sklodowska-Curie

- First woman to earn a Physics degree (Sorbonne University) and 1st one in her class (1893).
- First science PhD in Europe (1903)
- First Nobel prize in Physics (1903). First person to win two Nobel (1911)
- To teach, to be lab head and professor at the Sorbonne University (1906).
- First woman member of the French Academy of Medicine (1922).
- First woman buried in the Panthéon of Paris on her own merits (1995)



A scientific woman in a society with traditional male values

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"The action you advise me to follow would be a serious mistake on my part. In fact, the prize was awarded for the discovery of radium and polonium. I think there is no connection between my scientific work and my private life issues"

RENCE 1911



LORENTZ WARBURG WIEN JEANS RUTHERFORD ENSTEIN LANGEVIN
PIERRE Madame CURIE POINCARÉ KAMERLINGH ONNES

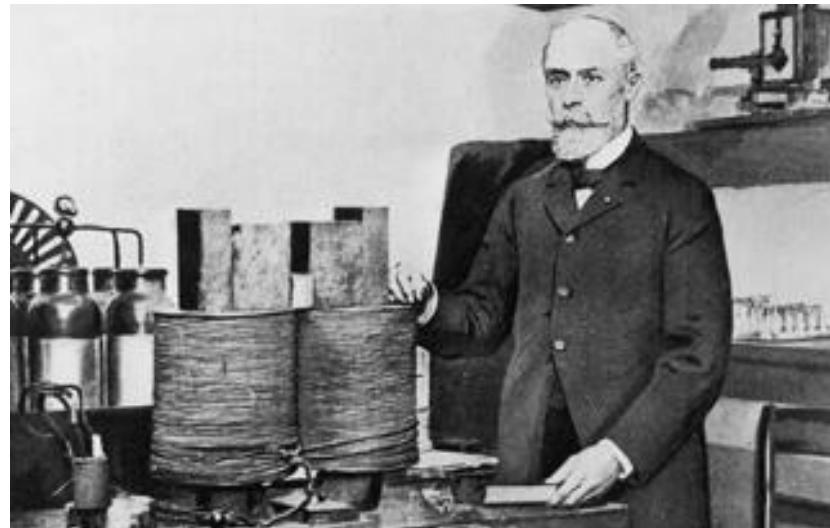
Discovery of radium

1895: Discovery of X-Rays



Photograph by Wilhelm Roentgen Courtesy General Electric Co.

1896: Discovery of Uranic rays

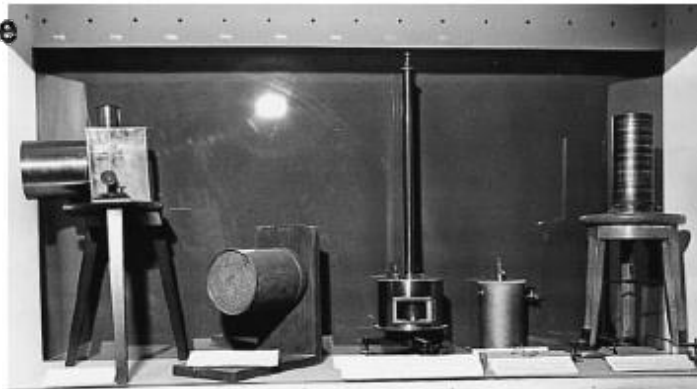
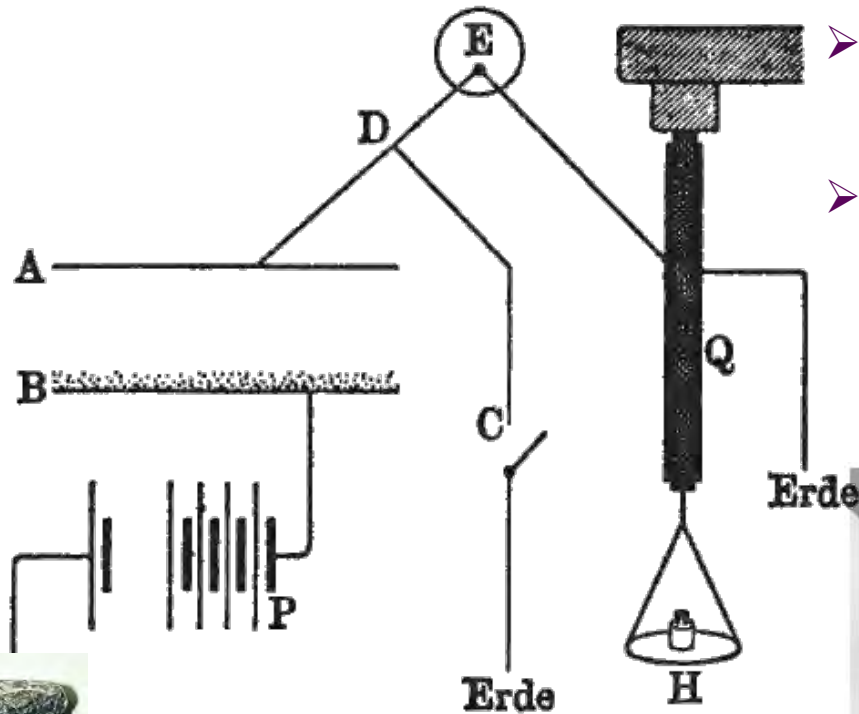


1897: M Curie thesis research uranic rays



Discovery of radium

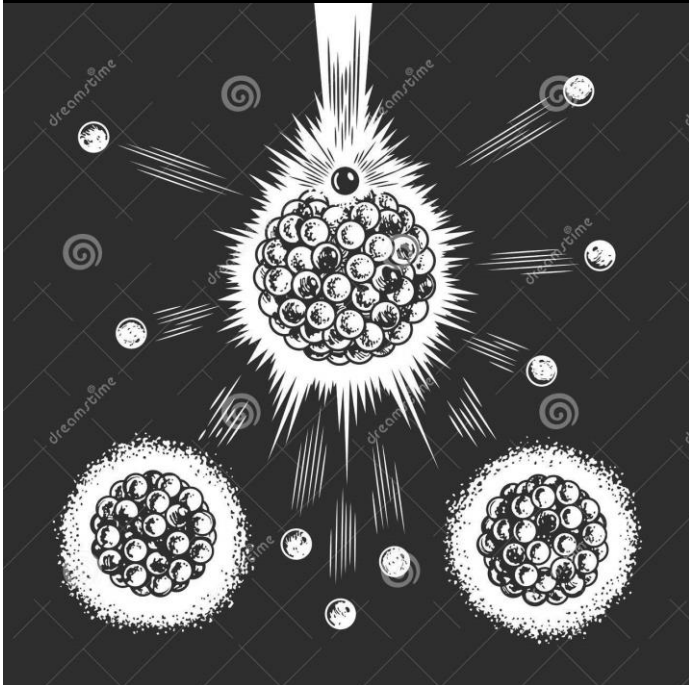
- Two months for the experimental setup
- piezoelectric quartz designed by Pierre Curie
- M Curie: experimental program and key decision to characterize the radioactivity.



Marie and Pierre Curie 1903

Discovery of radium

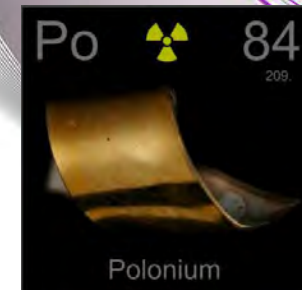
Feb-1898: a highly radioactive unknown substance



Mar-1898: Pierre Curie to join Marie Curie research



Discovery of Po (uranium x100)

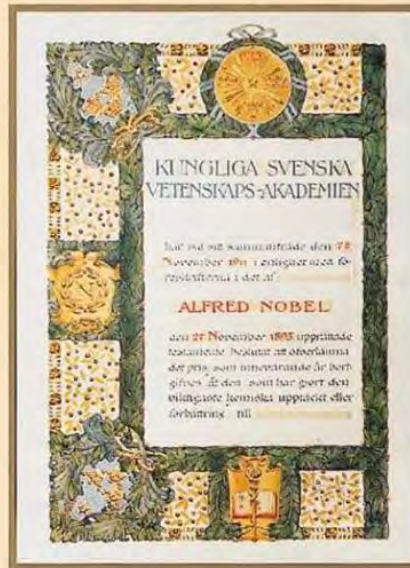


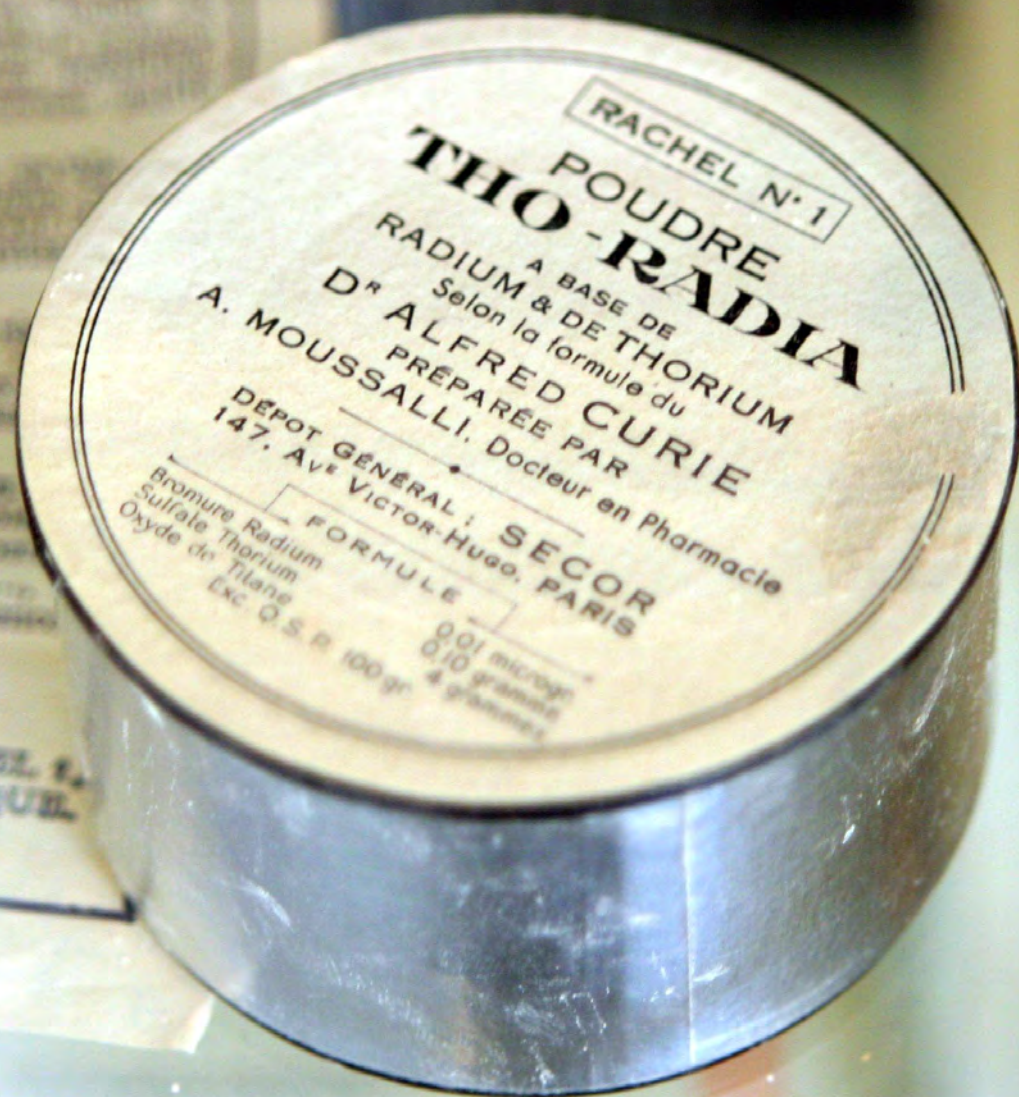
Discovery of Ra (uranium x1000)



Nobel prizes

- 1903: Nobel Prize in Physics for the discovery of natural radioactivity.
- France celebrates historic event.
- 1911: Second solo Nobel Prize in chemistry. Discovery of radium and polonium.





DR. RACHEL I.
MAURELQUEL

*Le
Rouge
à
Lèvres
sain*



**Rouge
à Lèvres
THO-RADIA**

ORANGÉ, FEU, VIF, MOYEN, FONCÉ.

ÉTUI COMPLET : 16^f - RECHANGE : 8^f



EN PHARMACIE SEULEMENT

The industry of radium



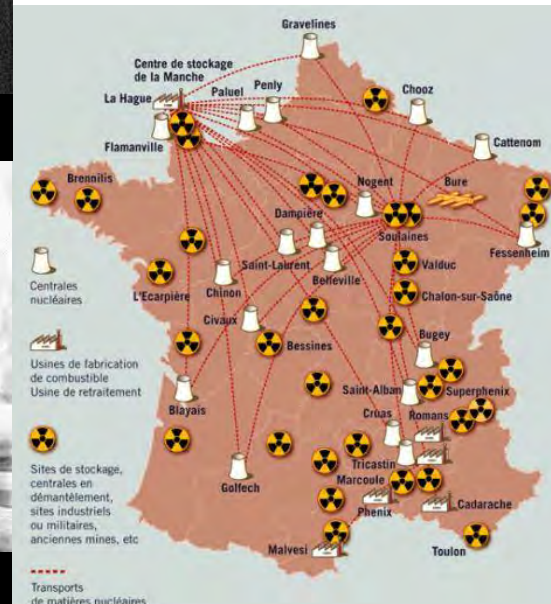
pitchblende



Mine in Bohemia



factory of radium of Armet de Lisle



Physics and metrology laboratories



Rue Cuvier lab, 1908

TRAITÉ

1910-1914 expansion of
radium industry worldwide



Brussels 1910, committee of experts

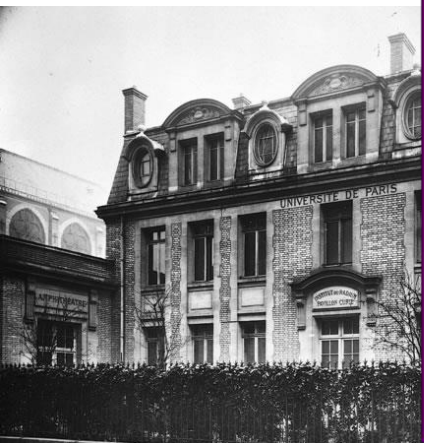


Curie 1912

Construction of a multidisciplinary center: The Radium Institute

"The person who will manage the Institute will not be limited only to coordinate scientific research, she will also have to contribute to the development of radium elements in France by establishing relationships with industry. Also she will have to constantly run a small factory belonging to the Institute. Her technical advices will support the progress of the bio-medical applications"

Marie Curie 1912



Radium Institute, 1914

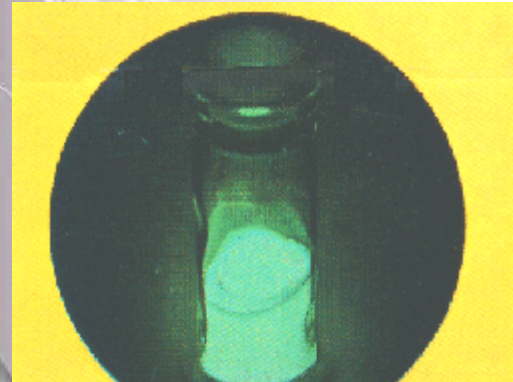


Cladius Regaud 1914



First World War : The Petit-Curies

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radon filled tubes , 1916



PRIMERA GUERRA MUNDIAL
1914-1918



American soldiers, 1919



Ms. Meloney and (1920)



"Presented by the US president, from American women to Madame Marie Sklodowska Curie, in recognition of her extraordinary service to science and humanity for the discovery of radium "



Marie Curie and Ms. Meloney (1920)

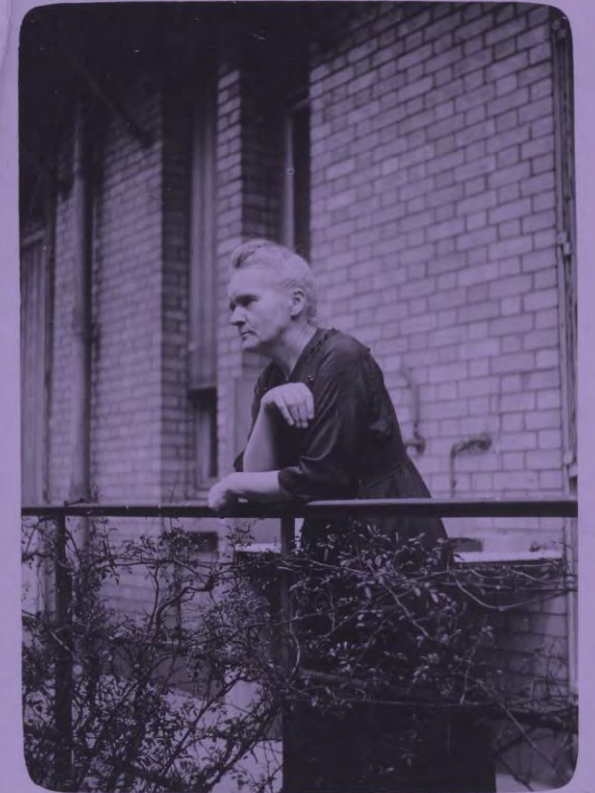
The Curie Foundation



Marie and Irene Curie, 1925

"I will never forget the look of intense joy that came over her when Irene and I showed her the first radioactive element (produced artificially) in a small glass tube. I can still see her holding this small glass tube with the radioelement, among her weak damaged fingers because of the radium. To verify what we were telling her, she put the Geiger-Muller counter near the sample and could hear numerous clicks ... This was certainly the last great satisfaction of her life"

Frederic Joliot-Curie, 1934



Marie Curie, Curie laboratory terrace, 1934

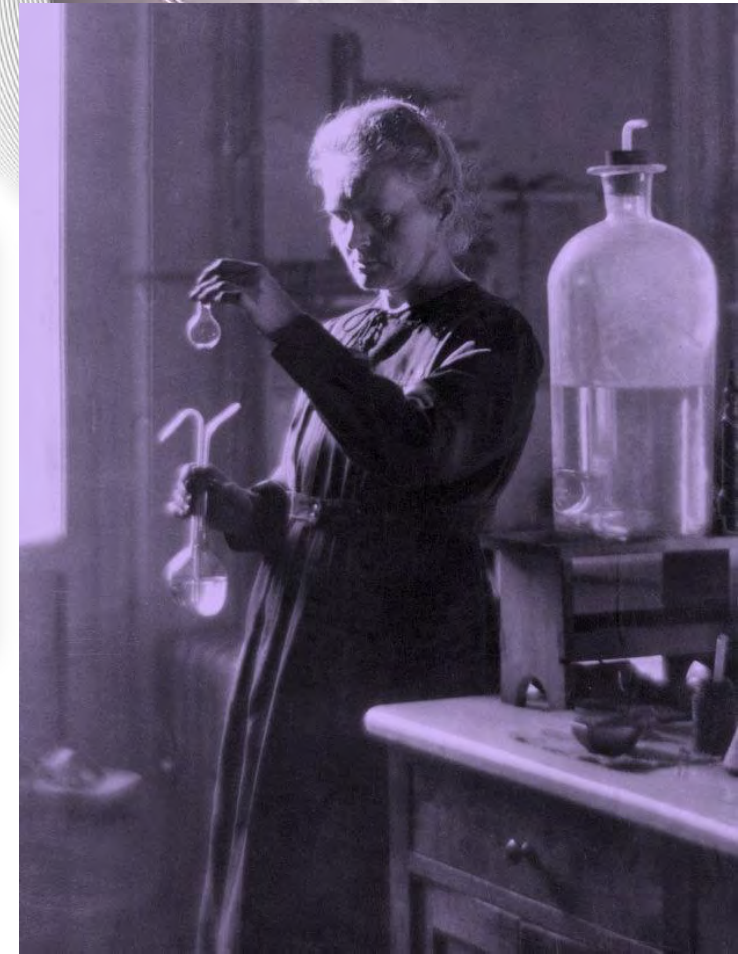
Marie Curie and her legacy: science

- Besides of creating a new scientific discipline, she formed many nuclear and radiochemical physicists in her lab.

"Medical treatment should be permanently supported by scientific research, without it no progress is possible"

Marie Curie, Institute of Radium, Warsaw 1932

- The Curie Institute, that is the evolution of the Curie Foundation, today remains as a very important specialized research and cancer treatment center



Marie Curie and her legacy : medicine (cancer)

"The first experiments on the biological properties of radium were carried out successfully in France with samples of our laboratory, when my husband was still alive. The results were immediately encouraging, so the new branch of medicine, called radiotherapy, developed rapidly, first in France and then in other countries ... the results were increasingly important for the treatment of various diseases, particularly cancer.

You can easily understand how deeply grateful I felt for the privilege to realize that our discovery had become a benefit to humanity, not only because of its great scientific importance, but also for its strength with efficient actions against human suffering and this terrible disease. This was indeed a splendid rewards to our years of hard work “

Marie Curie, 1923



Legacy: medicine

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Fig. 79. — Appareil moulé en cire avec blochets porte-radium.

Treatment with Radium tubes, 1920. Curie Museum, Paris



Treatments with radium needles. Cou



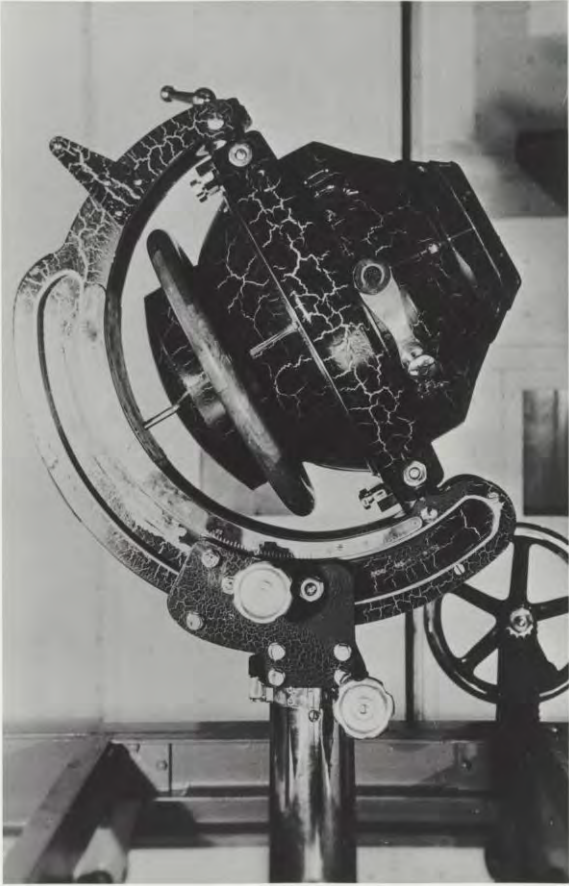
Current treatment for lip cancer with iridium needles

Marie Curie and her legacy: medicine (Radiotherapy)

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1st radium bomb, Stockholm 1922. Courtesy Curie Museum of Paris



Treatment with radium bomb, 1935. Courtesy Curie Museum of Paris

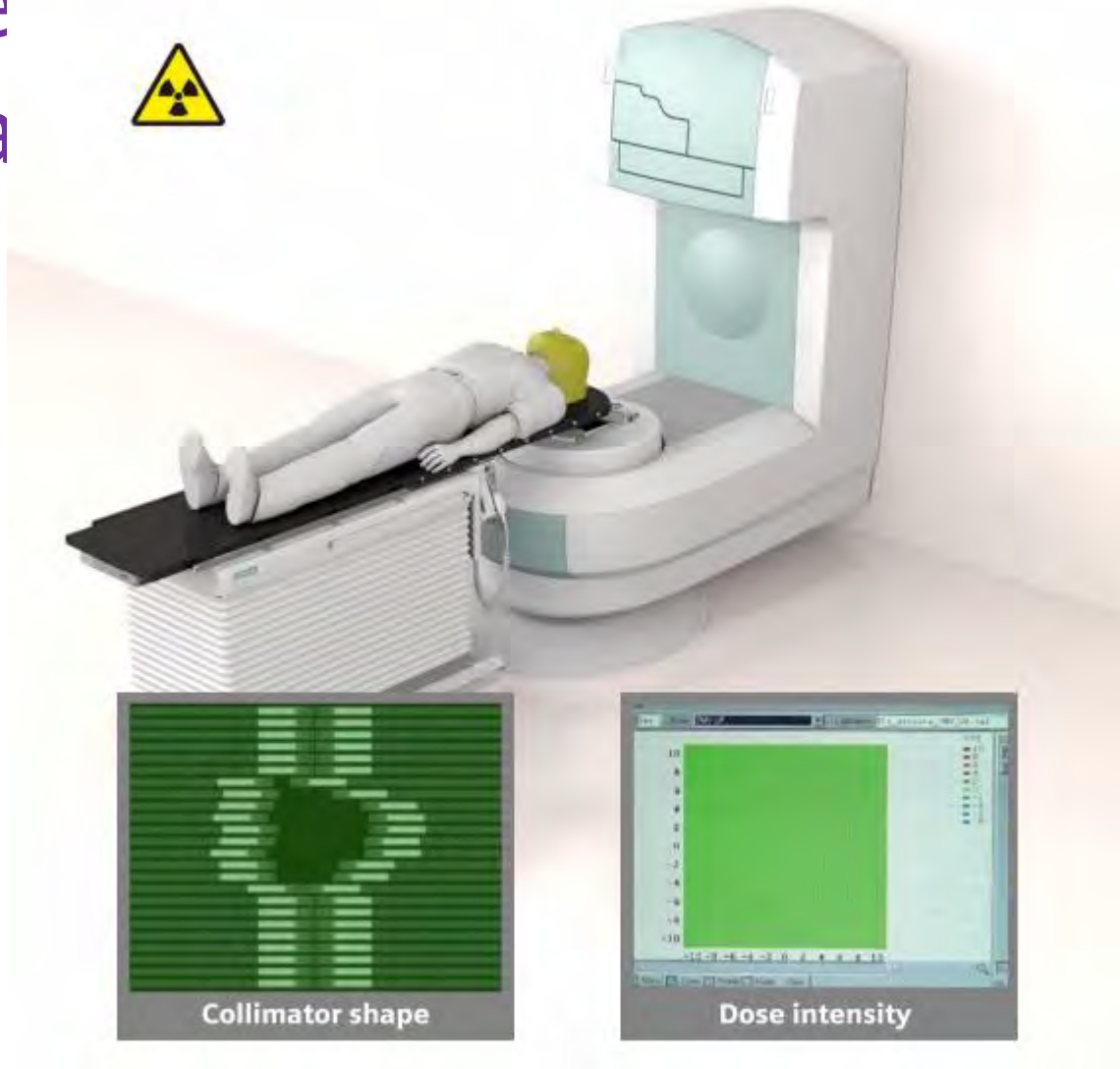


Treatment with Cobalt bomb, Paris 1955



Treatment with first Cobalt bomb in Spain, 1957

Marie Curie (Radiothera



Marie Curie and her legacy: scientific women



"It is a woman who is in charge of research and numerous applications of radioactivity ... she has a whole team of women, PhD and students from the university, helping her and sharing laboratory work!"





Hertha Ayrton (Inglaterra, 1854 – 1923)



Lise Meitner (Viena, 1878-1968)



Ellen Gleditsch (Noruega, 1879–1968)



Harriet Brooks (Canadá, 1876 – 1933)



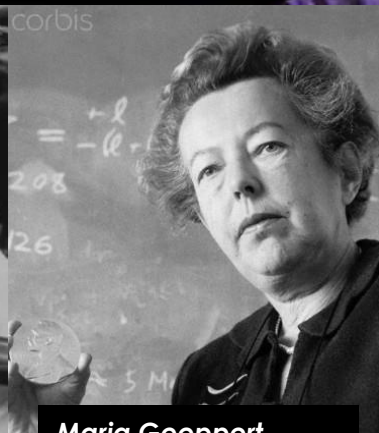
Edith Quimby (EEUU 1891 – 1982)



Thanks for your attention



Chien Shiung Wu (China 1912 – 1997)



Maria Goeppert
(Polonia, 1906 – 1972)



Katharine Way (EEUU, 1903 – 1955)



Marietta Blau (Viena, 1894-1970)



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THANK YOU!

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