

上海外语教育出版社



In this unit, we are going to

- ▶ describe scientists and their work;
- ▶ deepen an understanding of challenges faced by scientists from different cultures and their achievements;
- ▶ analyse and evaluate people's attitudes towards difficulties;
- ▶ identify the author's feelings in reading, and write a descriptive essay.

2

《高中英语》（上外版）

选择性必修第二册第一单元

Scientists

授课教师：孙依静

《高中英语》（上外版）

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课时	授课内容
1	Getting Started/ Reading A
1	Reading A/ Vocabulary Focus
1	Reading A/ Grammar in Use
1	Listening, Viewing and Speaking
1	Reading B
1	Critical Thinking
1	Writing
1	Further Exploration/ Self-assessment



学习目标 Learning Objectives:

At the end of the lesson, you will be able to ...

1.能通过与人物专栏文章进行比较，以及将富兰克林生平事迹按时间顺序排列，掌握其传记的主要内容和语篇特征；

grasp the main content and the textual features of Rosalind Franklin's biography by comparing it with a feature article and arranging her life events in order of time;

2. 能通过分析作者对词汇、句子结构和修辞方法的选择，辨认作者的情感；

identify the author's feelings by analyzing the author's choice of words, sentence structure and figures of speech;

3. 能通过分析富兰克林应对困难时展现出的精神品质和诠释成为科学家对她的意义，解读她对科学的热爱。

explain Rosalind Franklin's undying passion for science by analyzing the various qualities she displayed in her approaches to difficulties and by interpreting what it means to her to be a scientist.

? What difficulties might scientists face when collecting seeds in high-altitude areas? Read the text about a biologist who devoted his life to the work he had chosen to do.



SAVING TIBET ONE SEED AT A TIME

Today, more than 40 million seeds from nearly 1,000 different kinds of plants have been collected from the Qinghai-Tibet Plateau. We owe this to Zhong Yang, a professor of biology at Fudan University and Tibet University, who saw the value of studying plants.

Zhong spent a lot of time and effort building a collection of seeds for China's national seed bank. A seed bank preserves plant seeds and may have medical or agricultural value in the future. Storing seeds also protects biodiversity — the balanced variety of plant and animal life in the world.

More than 80 percent of the seeds that Zhong collected are from

the Qinghai-Tibet Plateau — a large elevated plain that is also known as the “roof of the world.” The plateau is home to almost one fifth of China's plants and is therefore an important resource. However, it is highly challenging for people to collect seeds from the plateau. One has to deal with varying climates and environments depending on an area's position above sea level. In fact, a third of the seeds collected on the plateau were found at a height of 4,000 metres above sea level! On top of that, the seed bank requires that at least 5,000 seeds of each plant be collected so they can be preserved for more than 100 years.

Some seeds are easy to collect

ROSALIND FRANKLIN

Physical chemist Rosalind Franklin discovered through an X-ray photograph that the structure of DNA was a double helix¹. This discovery is considered one of the most important scientific advances in history. Over the course of her career, Franklin had an undying passion for science. Her work eventually became the basis of many other findings.



Rosalind Elsie Franklin was born in London, England on 25 July 1920. She came from an educated Jewish family. As a child, Franklin preferred facts and reasons to stories and make-believe. She knew she wanted to be a scientist when she was 15. In 1941, Franklin graduated from university despite her father's disapproval of higher education for women. At the young age of 26, Franklin had already published five papers on the physical structure of coal and carbon. Nothing got in the way of her scientific research, even though science was considered a “man's world.” During World War II, Franklin continued to cycle to work while London was being bombed by Germany.



Franklin returned to England in 1951 to work as an X-ray crystallography expert at King's College London. She was assigned to study the structure of DNA. However, her efforts often went unnoticed. Women in the field of science were not respected at that time. They could not eat lunch in the same room with the male scientists and they were not invited to join in after-work discussions.

As the only female on the DNA project, Franklin worked alone. She was close to solving the DNA puzzle. Franklin's skills in X-ray crystallography, coupled with her “extreme clarity and perfection,” had resulted in the famous image — photograph 51. But Franklin was very careful and wanted more evidence. Without her knowledge, Maurice Wilkins and two other male scientists, James Watson and Francis Crick, got hold of her data. Soon after, Watson and Crick published their model of DNA based on Franklin's photograph.

Franklin eventually left King's College in 1953 and began her most

"Lively, absorbing, and evenhanded. . . . What emerges is the complex portrait of a passionate, flawed, courageous woman."

—*Washington Post Book World*

BRENDA MADDOX

ROSALIND

FRANKLIN

THE DARK LADY OF DNA

THE DARK LADY OF DNA

- Why was Franklin called "the dark lady of DNA"?
- What does the word "dark" mean?





TIME

Event(s)

1920

Rosalind Franklin was born in London.

1941

She graduated from university.

1945

She earned her doctorate in physical chemistry.

1951
-
1953

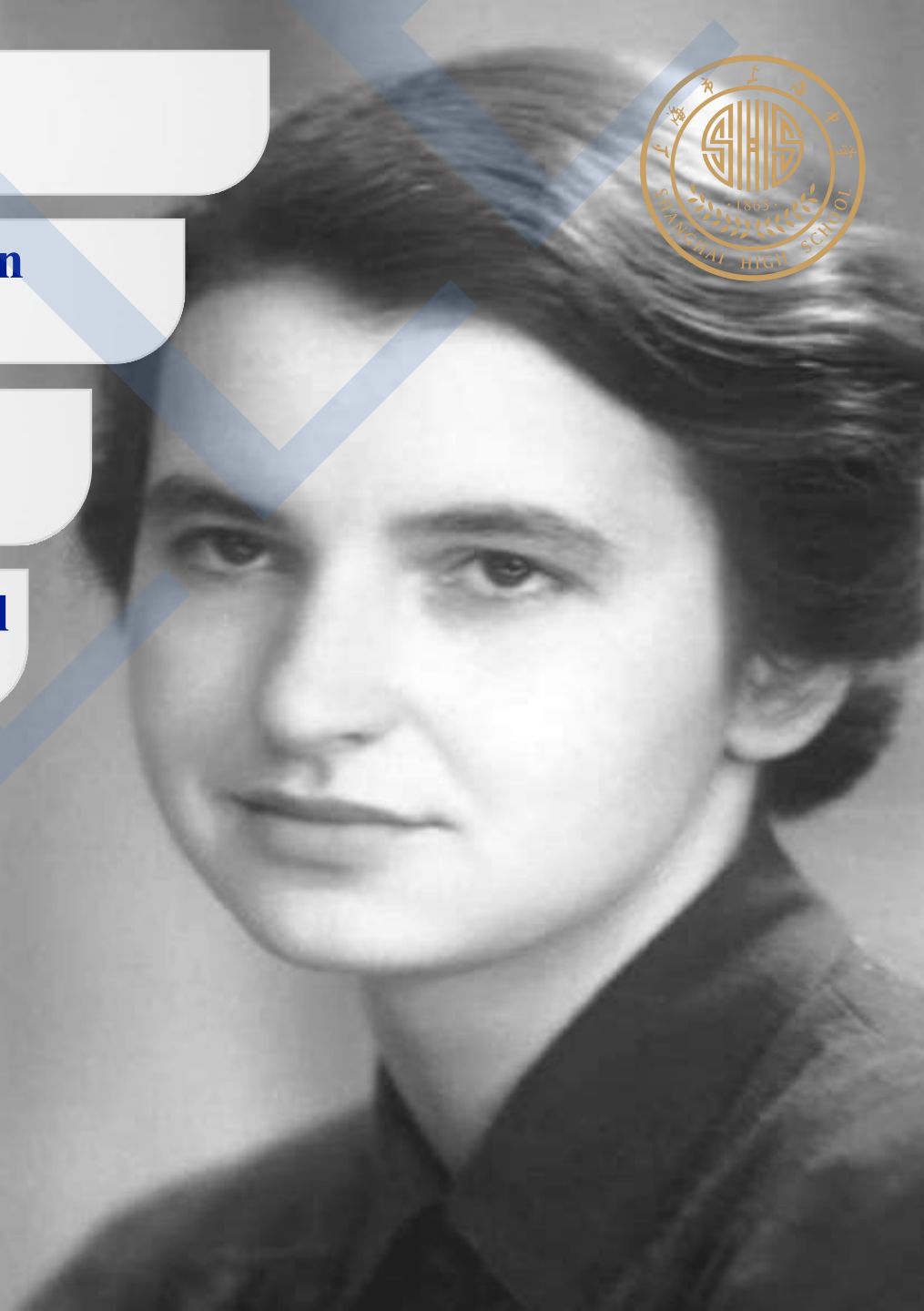
She worked as an X-ray crystallography expert at King's college.

1956

She found that she had cancer.

1958

She passed away.





Her outstanding quality as a
her undying passion
scientist: for science _____.



Her father's disapproval of higher education for women.

Science was considered a “man’s world”.

Her efforts often went unnoticed./ Women in the field of science were not respected.

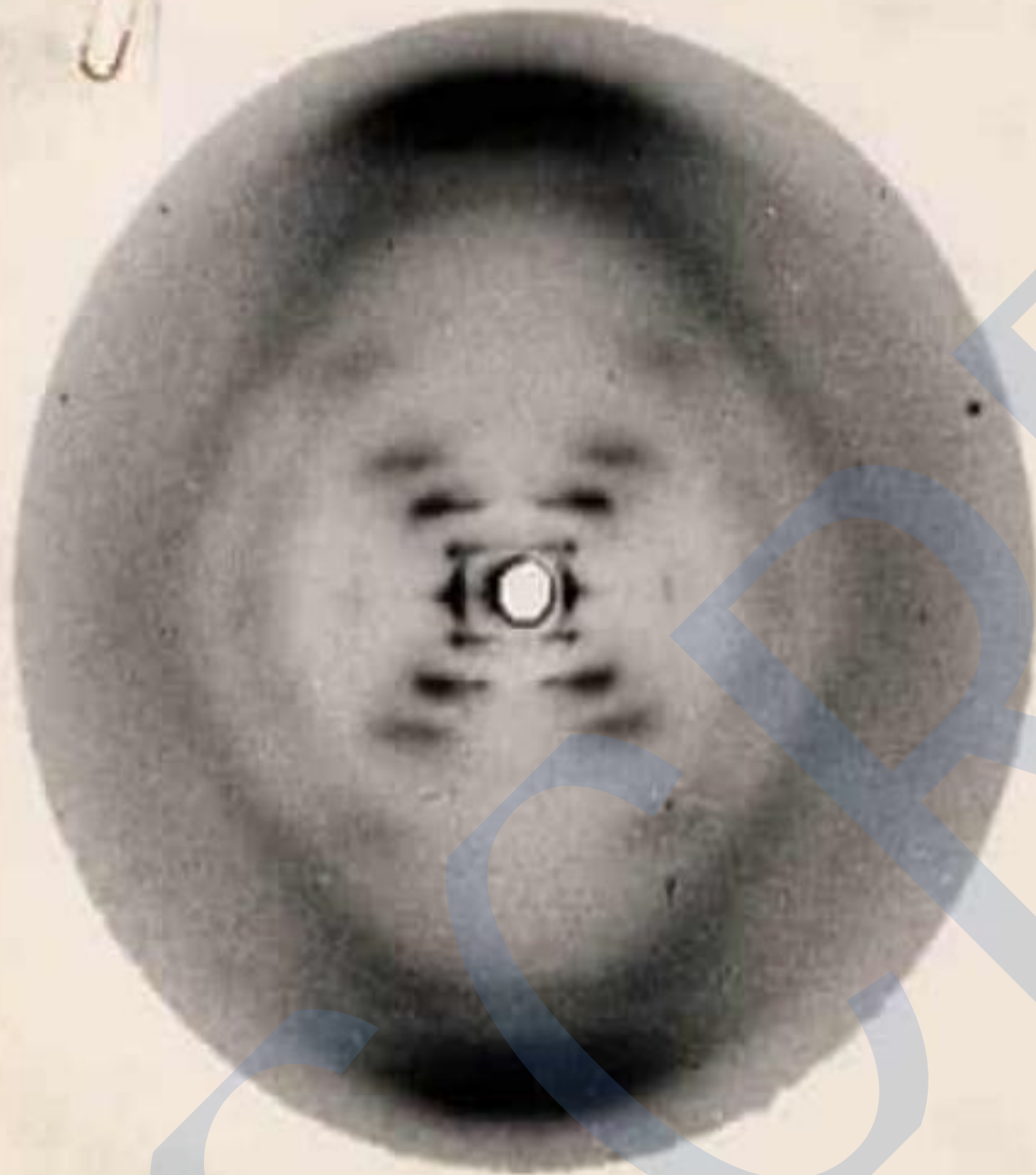
She often worked alone.

Three male scientists took hold of her data.

...

**Difficulties
Franklin
faced as a
female
scientist**

**The famous
image –
photograph
51**



Franklin &
Wilkins
Photomicrograph
Type D

Plated

The Nobel Prize in Physiology or
Medicine 1962

Francis Crick
James Watson
Maurice Wilkins

The Nobel Prize in Physiology or Medicine 1962



the Dark Lady of DNA

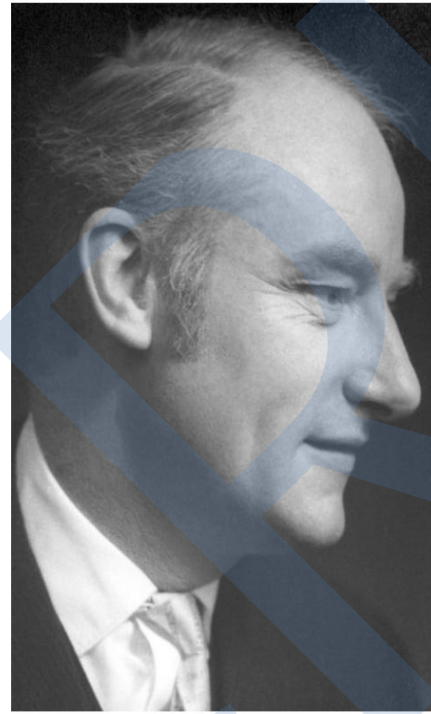


Photo from the Nobel Foundation
archive.

Francis Harry
Compton Crick

Prize share: 1/3



Photo from the Nobel Foundation
archive.

James Dewey
Watson

Prize share: 1/3



Photo from the Nobel Foundation
archive.

Maurice Hugh
Frederick Wilkins

Prize share: 1/3

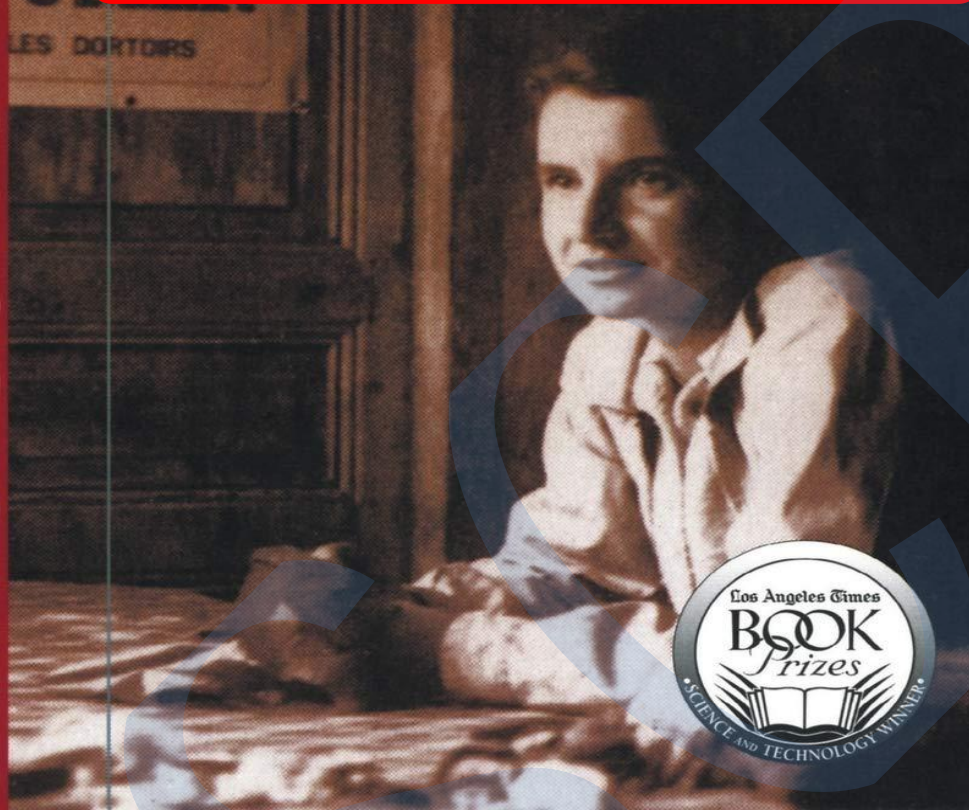
"Lively, absorbing, and evenhanded. . . . What emerges is the complex portrait of a passionate, flawed, courageous woman."

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BRENDA MADDOX

ROSALIND FRANKLIN

THE DARK LADY OF DNA



- **Why was Franklin called “the dark lady of DNA”?**

Although her work on DNA was crucial to the discovery of its structure, her contribution to that discovery is little known.

- **What does the word “dark” mean?**

unknown, unheard of, tragic...

How does the author feel about the difficulties Franklin faced as a female scientist? Find evidence from the text to support your answer.



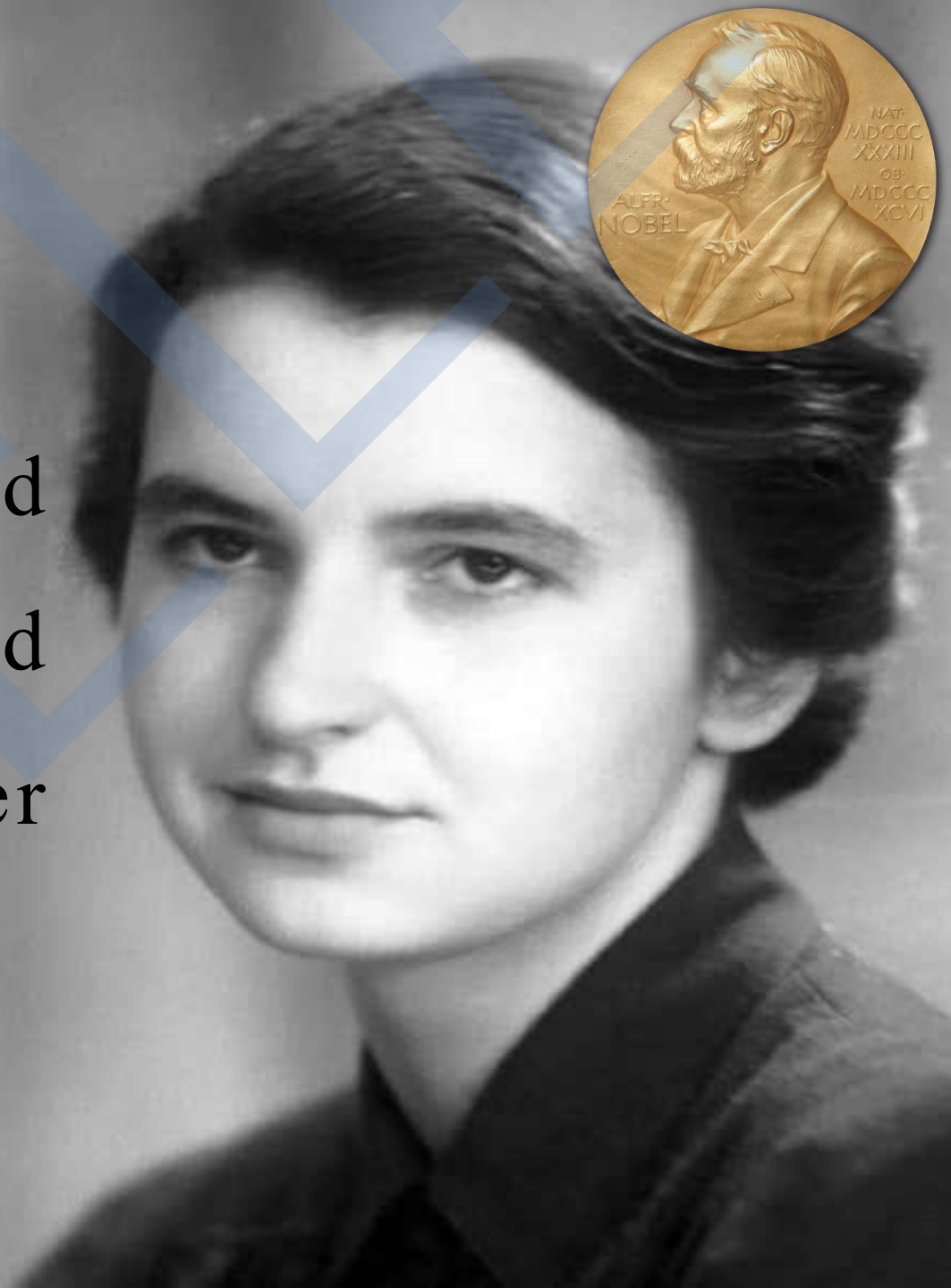
- ✓ **choice of words**
- ✓ **sentence structure**
- ✓ **figures of speech**

...



A rhetoric question:

If she were alive, would Franklin have been recognized for her work, alongside her fellow scientists?



To Be A Scientist



Group Discussion:

To Be A Scientist

Directions:

Work in groups of FOUR and write down your understanding of what “to be a scientist” means for Rosalind Franklin in **complete sentences** based on her biography and the following two quotes. **Present your understanding to the whole class** and justify it with **her deeds** (what we discussed in this lesson) and **her words** (the following two quotes)

Be A Scientist: QUOTE



- In my view, all that is necessary for faith is the belief that by doing our best we shall come nearer to success and that success in our aims (the improvement of the lot of mankind, present and future) is worth attaining.
- I see no reason why the belief that we are insignificant should lessen our faith – as I have defined it.



For her, to be a scientist means ...

to cast a cold eye on worldly success and difficulty, and march on passionately on the path to pursuing truth for the common good of the human race.

Her Deeds

She never lost heart.

She took up every challenge head-on.

She had an undying passion for science.

Her Words

Success in our aims (the improvement of the lot of mankind, present and future) is worth attaining.



ROSALIND FRANKLIN (1953)
Visionary scientist



“... from now on, whenever you hear the names of the two men who discovered DNA, make it a troika: Franklin, Watson and Crick—in **THAT** order.”



Assignment



A letter from Rosalind Franklin

Suppose, by some miracle, Franklin were informed that her contributions were finally recognized. She decided to write a letter to provide encouragement and suggestions for women who've been courageous enough to follow her steps. You are expected to write a letter (about 80 words) from the perspective of Franklin, and your letter should include:

1. her feelings of being recognized
2. her suggestions for female scientists



Assignment



CHECKLIST

- ☐ Do I bear my readers (female scientists) in mind when writing this letter?
- ☐ Does the letter convey Franklin's feelings which are consistent with her personality?
- ☐ Can the suggestions provided in my letter reflect Franklin's qualities?
- ☐ Is my letter clear, coherent and grammatically correct?

Thank you!